

**Lakehead Forest
Independent Forest Audit
April 1, 2004 – March 31, 2009**

Final

**ArborVitae Environmental Services
Ltd.**

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1.0 Executive Summary

This audit has reviewed the management of the Lakehead Forest between April 1, 2004 and March 31, 2009, a period that covered the last three years of the 2002 Forest Management Plan (FMP) term, the development of a 2007 FMP, and the first two years of activities under that plan. The institutional landscape features two ministry of Natural Resources (MNR) Districts (Thunder Bay and Nipigon) that have jurisdiction over parts of the Forest and, during much of the audit period, in each District there was an Local Citizens Committee that contributed to the management of the Forest. There are two Aboriginal communities with interests in the Forest, many overlapping licensees, and the Forest is heavily used by local residents and visitors. The Crown land portion of the Forest is interspersed with parcels of private land, further complicating management. This is a complex forest with many management challenges; the overall audit result was positive for both MNR and the Company, Greenmantle Forest Inc. (GFI).

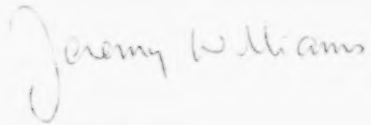
A theme that emerged in this audit was the need to improve communication and working relationships. This was generally true with respect to both MNR and the Company and their rapport with the two Aboriginal communities. While there were some positives in this set of relationships, neither MNR nor GFI appeared to exert itself to develop anything more than sporadic interaction with either community. While the auditors recognize that there are many variables involved and one cannot interact with an organization that does not wish to engage, the efforts of both MNR and GFI came across as perfunctory. In September 2009, late in the audit process, a positive development occurred in that Red Rock Indian Band (RRIB) became a shareholder in Superior North Loggers Inc. (SNLI), which assumed the full ownership of GFI at that time. This creates a good opportunity for GFI and MNR to deepen their relationships with RRIB.

Management of the Black Bay Peninsula (BBP) has long been a high-profile regional issue. Developing and implementing a management strategy for this Peninsula has been divisive, and the two MNR Districts have differing perspective on what constitutes an appropriate balance between enhancing the wildlife capability of the BBP, maintaining its remoteness, and providing for commercial timber operations. We believe that the long-running nature of the philosophical differences between the two Districts, and the ensuing tensions, indicate that the regional level of MNR should become involved, and we have developed such a recommendation.

A second audit theme is training. Training is an important part of making full use of available human resources, and the audit team made five recommendations that are intended to capitalize on opportunities for gains. As forest management gets ever more challenging, adaptive, and comprehensive, targeted investments in upgrading staff skill sets will yield high returns.

In total the audit team has provided 22 recommendations, plus a recommendation that the Sustainable Forest Licence (SFL) should be extended. Five recommendations are directed at one or both of the MNR Districts, seven are directed to the Company, and seven are intended for the MNR and the Company jointly. Corporate MNR is identified as the principle party in the remaining three recommendations.

In summary, the audit team concludes that management of the Lakehead Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the SFL held by GFI. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of SFL #542460 for a further five years.



Jeremy Williams,
Lead Auditor

2.0 Table of Recommendations

Recommendation on Licence Extension
The audit team concludes that management of the Lakehead Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Greenmantle Forest Inc. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #542460 for a further five years.
Recommendations Directed to SFL Holder / MNR District
2. In consultation with the Lakehead Area LCC, MNR Thunder Bay District shall develop and implement a training/ orientation program for new LCC members and provide training to existing LCC members to improve committee functionality and effectiveness and provide an overview of the provincial forest management system.
3. MNR Thunder Bay shall initiate discussions with Fort William First Nation to develop long-term approaches to working with and consulting with that community, and Nipigon and Thunder Bay MNR shall jointly, as per the cross-district protocol, seek to initiate similar discussions with the Red Rock Indian Band.
4. GFI shall initiate efforts to develop separate communications protocols with the two local Aboriginal communities as a first step in improving communication.
5. Thunder Bay and Nipigon District MNR and GFI shall ensure that all planning team members receive appropriate FMP training for the preparation of the five-year operating plan (covering the 2012-17 period), and that any planning team facilitation be provided by a trained facilitator.
6. Thunder Bay and Nipigon District MNR and GFI shall ensure that appropriate steps are taken (e.g. allocate additional resources, provide additional training) to minimize delays in delivering the next major planning product for the Lakehead Forest (anticipated to be the 2012 – 2017 operating plan).
7. Thunder Bay and Nipigon District MNR shall work with GFI and affected overlapping licensees to develop approaches to minimize the potential for administrative delays to BBP winter operations.
8. The MNR and GFI shall identify opportunities to undertake harvesting in riparian zones in the second five-year period of the 2007 FMP.
9. GFI shall use its local knowledge and experience and information from scientific research and silvicultural assessments to develop detailed prescriptions for conversion activities for all appropriate forest units. An FMP amendment shall be prepared to add any necessary and appropriate SGR's which are based on these prescriptions into the 2007 FMP in time for the preparation for the 2011/2012 AWS, especially for mixedwood sites.
10. GFI shall develop and implement a slash/ chipper waste management system to reduce the amount of productive area lost on the Forest.
11. GFI shall develop quality control measures for the reporting, identification and mapping of natural regeneration areas on both normal harvest and natural disturbance areas. These measures shall be implemented in time for the preparation of the 2009/2010 Annual Report. In addition, GFI shall develop and implement a procedure to ensure that all harvest areas have either received renewal treatments, or are carried over to the next five-year FMP operating term. This procedure shall be completed in the final year of each five-year period during Annual Report preparation.

12. GFI shall review the level and type of training provided to overlapping licensees on construction of culverts and revise as necessary to ensure that all culverts are installed to appropriate standards.

13. MNR Thunder Bay and Nipigon Districts shall actively pursue opportunities to meet tri-laterally with GFI to further improve working relationships and provide more consistent direction.

14. GFI shall develop and implement a comprehensive training plan and program for staff and maintain records of training that has been received.

15. The MNR Nipigon District Manager shall take appropriate steps to assess the reasons for the ACOP preparation and reporting/approval issues and develop a remedy, and ensure that all outstanding obligations identified in this audit (closing non-compliances, approving BBP monitoring reports) are completed.

16. MNR Thunder Bay, MNR Nipigon, and GFI shall conduct joint annual meetings to discuss compliance monitoring matters in order to facilitate consistent delivery of the compliance monitoring program on the Lakehead Forest.

17. GFI shall establish and implement a mechanism for reviewing how well the overlapping licensees deliver environmental and compliance awareness training to their frontline staff and document the results of such reviews.

18. Beginning in 2010, Nipigon District, in partnership with Thunder Bay District, shall lead regular five-year reviews of the BBP EMA Strategy, which will include GFI and other stakeholders as participants. The review shall include a determination of how the Strategy is impacting wood supply on the Lakehead Forest and all review recommendations and conclusions shall be supported by both Districts.

21. In conjunction with GFI, Thunder Bay and Nipigon MNR shall organize and facilitate discussions between themselves and the overlapping licensees to examine the potential for low-cost water crossing construction options.

22. The Thunder Bay and Nipigon District MNR, in consultation with GFI and overlapping licensees, shall identify and facilitate implementation of simple, practical measures to address the issue of vandalism and theft of property (including harvested timber) left on site during periods when harvest operations are being conducted.

Recommendations Directed to Corporate or Regional MNR

1. MNR Northwestern Region shall become actively engaged in facilitating improvements in the rapport between the Thunder Bay and Nipigon MNR District staffs and in developing an approach to providing consistent management direction on the Forest, beginning with the treatment of late winter moose habitat. In addition, the terms of reference for the development of the 2012-2017 operating plan, or the next major plan product, shall provide for a Regional role as an adjudicator of major disagreements.

19. Corporate MNR and MNDMF shall consider the inclusion of mechanisms within a revised tenure system to encourage the development of more productive forests, including the restoration of forest stands/areas that have become degraded through historic management practices and natural disturbances.

20. Corporate MNR shall revise the agreements it has with mills to pay Crown dues and renewal charges on timber that is processed to give the Crown the authority to notify the SFL-holder on a quarterly basis of amounts owing, and any other pertinent information, when a mill falls behind on its payments.

3.0 Introduction

This chapter provides context for the audit, both in terms of the audit basis and process and in terms of the Lakehead Forest. Section 3.1 provides a high-level description of the audit scope, process, and input received – a more detailed description can be found in Appendix 4. The salient characteristics of the Lakehead Forest, and some key issues that have previously created challenges are identified in sections 3.2 and 3.3, respectively. These issues were among those that merited special attention during the audit. The chapter concludes with a summary of input received into the audit.

3.1 AUDIT PROCESS

The Crown Forest Sustainability Act (CFSA), and one of the CFSA's Regulations (160/04), directs the Minister of Natural Resources to conduct a review of each management unit every five years to ensure that the forest manager has complied with the terms of the Crown Forest Sustainability Act (CFSA) and associated regulations, appropriately developed and implemented forest management planning, and that all licensees have complied with the licence terms and conditions. A detailed description of the scope and process of an Independent Forest Audit (IFA) is in the Independent Forest Audit Process and Protocol (IFAPP), which contains some 150 audit procedures.

The regulation stipulates that the audit is to assess the compliance of forest planning and operations with the CFSA, the Forest Management Planning Manual (FMPM), and applicable guides and regulations, and the compliance of the licensee with the Sustainable Forest Licence (SFL). Greenmantle Forest Inc (GFI, also referred to as the Company in this report) is the holder of the SFL (SFL #542460) for the Lakehead Forest. The effectiveness of operations in meeting plan objectives and improvements made as a result of prior IFA results, are also to be assessed. The IFAPP also requires the audit team to provide a determination regarding the sustainability of forest management and recommend whether the term of the SFL should be extended (the Regulation also includes the latter requirement).

The Lakehead Forest was last audited in 2004. Both GFI and the MNR are auditees. This IFA covers the five-year period from April 1, 2004 to March 31, 2009, which encompasses the last three years of operations under the 2002 FMP, the preparation of the 2007 FMP and the first two years of operations under that plan. A more detailed description of the audit process is provided in Appendix 4, as well as a summary of input provided to the audit process and public and Aboriginal consultation. ArborVitae Environmental Services Ltd. undertook this IFA using a five-person team. Profiles of the team members, their qualifications and responsibilities, are provided in Appendix 6.

3.2 MANAGEMENT UNIT DESCRIPTION

The Lakehead Forest is centred on Thunder Bay, to the east it extends as far as Nipigon and to the west, it abuts the border of Quetico Provincial Park. The western portion of the Forest extends south to the US border, and comes down to the Lake Superior shoreline in the eastern half. The Forest includes the Sibley and Black Bay peninsulas, both long extensions of land into Lake Superior. Figure 1 shows the Forest and many of the more significant lakes, communities and roads. Black Bay Peninsula is east of Dorion and is about 75 km long. The Fort William First Nation (FWFN) and Red Rock

Indian Band (RRIB) communities are located within the Forest, with FWFN having been inactive on the Forest, while RRIB harvested about 10,000 m³ during the audit period.

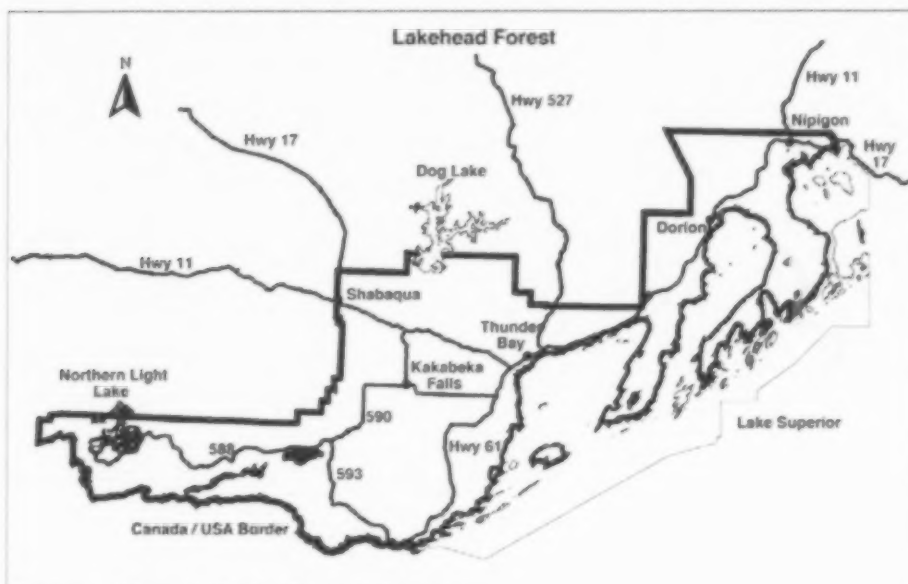


Figure 1. Map of the Lakehead Forest.

The Lakehead Forest lies within the MNR Northwest Administrative Region and Thunder Bay District leads the planning on the Forest. Some 30% of the forest area falls within Nipigon District, which has primary responsibility for operational planning, compliance and other field-level duties on that portion of the Forest. In addition, Nipigon District effectively led the preparation of the part of the 2007 FMP related to operations within Nipigon District, which includes the BBP.

The Lakehead Forest management unit is a relatively recent administrative creation – it was formed in 1997 via the amalgamation of the Port Arthur and Thunder Bay Crown Management Units (CMUs). In the following year, a block from the former Nipigon CMU was added. 1998 was also the year that MNR transferred planning and management responsibility to GFI. During the audit period, and until September 2009, GFI was 51% owned by Superior North Loggers Inc (SNLI) and 49% owned by Buchanan Forest Products Ltd (BFP). In September 2009, SNLI assumed full ownership of GFI. In 1998, SNLI was owned by 48 independent loggers who traditionally harvested timber on the three former CMUs; as of December 2009, there are 33 loggers remaining. FWFN joined SNLI in 2002 and RRIB joined in September 2009. All logging on the Lakehead Forest is conducted under the authority of overlapping forest resource licences; until recently, wood flow was largely dictated by the wood supply commitments in Appendix E of the SFL. The majority of hardwood volume harvested during the 2002 FMP term went to Buchanan Northern Hardwoods (33.4%) and Bowater's Thunder Bay pulp and paper complex (32.2%); only 1.5% of the hardwood volume harvested went to Levesque/Mulitply in Nipigon. Great West Timber, Northern Sawmills (both companies in the Buchanan Group) and Bowater's Thunder Bay pulp and paper complex were the primary users of conifer harvest volumes at 26.4, 26.1 and 27.8%, respectively, of the total volume harvested. The Nipigon veneer mill burned down in February 2007 and in March

2009, BFP entered receivership – the seismic shifts that the forest sector is undergoing are discussed in section 3.3.

The Lakehead Forest is generally well-roaded. Highway 11/17 runs through the unit along the north shore of Lake Superior into Thunder Bay, and from thence it heads northwest and exits the Forest at Shabaqua. The western half of the unit is accessed by a network of highways, including Highway 61, which provides a route to the international border from Thunder Bay, Highways 590 and 593, and Highway 588 which heads in a southwest direction from Highway 11, near Kakabeka Falls to west of Whitefish Lake. Until recently, the BBP was essentially unroaded, and it is highly-valued as a remote hunting area, as well as for its wildlife habitat and other ecological values. The question of whether to build road access, and how, has long been a contentious issue. The majority of the BBP is designated as a fish and wildlife category Enhanced Management Area (EMA), and a management strategy for the EMA was approved in February 2005.

While Figure 1 shows the Forest as a solid block of land bounded with a heavy black line, the reality is much more complicated, since there are many parcels of private land within the mapped boundary. Of the 767,000 ha shown as being within the Forest, 301,000 ha is patent land and another 8,000 ha is in other ownerships, mainly federal government. The remaining 459,000 ha is Crown land, and of this 64,000 ha is classed as unmanaged, which is the category used for Provincial Parks, Conservation Reserves and other lands that are unavailable for harvesting.

Netting down the landbase leaves only 395,000 ha to be managed by the Company, which is 51% of the area within the Forest boundary shown in Figure 1. Substantial portions of this area are unavailable – it includes almost 34,000 ha of water. Table 1 in the Trend Analysis (Appendix 7) provides greater detail on the attributes of the area, including the amount of productive area in each forest type.

While the Lakehead Forest falls within the northern part of the transition between the Great Lakes-St. Lawrence (GLSL) and boreal forest zones, Table 1 in the Trend Analysis clearly indicates that the forest is primarily boreal in nature. Spruce, jack pine, poplar and birch are the most important timber species, accounting for more than 90% of the free-to-grow production forest area. However, the minor working groups - soft maple, ash, white pine and red pine - are indicative of the GLSL.

There has been a long history of harvesting in the Lakehead Forest area. Settlers of European origin were drawn in large numbers to the area following the discovery of copper in the 1850's and silver in the 1860's. Significant timber cutting did not begin until the mid-1870's, when a sawmill was erected on the Kaministiquia River to process the timber from the railway right-of-way cut between Fort William and Savanne. Early loggers targeted jack pine and larch for ties and preferentially cut red and white pine where it was encountered. The early forest was prone to large fires that have been curtailed since more effective fire control measures were introduced in the 1950's.

On the Crown landbase, the highest proportion of managed production forest area is in the 61-80 year class, at 38%. The 81-100 year age class has another 18% of the area, and the 1-20 year class has 24%. There is only 6% in each of the 21-40 and 41-60 year age classes, which reflects past harvesting, fire suppression and lack of active renewal until the 1980's. However, in the red/white pine, jack pine and upland conifer forest

types, the 1-20 year age class has the majority of area, reflecting both the extensive early harvesting and the dedicated renewal effort of the last 20 – 25 years.

The five years preceding the beginning of the audit period saw harvesting on the Lakehead Forest concentrate on salvaging timber downed during a July 1999 windstorm. The blowdown area covered a gross area of 37,000 ha southwest of Thunder Bay; by 2004, the remaining blowdown timber was no longer marketable and there was negligible salvage afterwards. A 14,000 ha fire occurred near Northern Light Lake in the summer of 2007, which led to minor revisions to the planned harvest.

The Lakehead Forest provides a wide variety of recreational opportunities and has a number of significant habitats and species present, including deer, moose, bear, lynx, wolverine and marten. The Forest has one of the highest concentrations of peregrine falcons in the province; the FMP provides more detailed information regarding wildlife species of interest on the Forest.

3.3 CURRENT ISSUES

The Lakehead Forest has presented GFI and MNR with a considerable number of management challenges since its formation. Some arose due to broad issues that have external origins, whereas other issues are specific to the Lakehead Forest.

The current audit is being undertaken during a period of severe economic hardship for the Canadian forest sector, and many companies have entered receivership. Most mills in Northwest Ontario were closed during the audit, some of these permanently, and it does not exaggerate the situation to suggest that a period of profound sectoral transformation has been initiated. This has affected GFI in a number of ways. Buchanan Forest Products Ltd., a key shareholder of GFI, entered receivership in March 2009. Much of the timber cut on the Forest was directed to mills owned within the Buchanan group of companies, which have not been operating for some time. Another destination mill (Levesque Plywood in Nipigon) burned in February 2007. Other potential destination mills have reduced or ceased operations and harvesting activity on the Forest has declined precipitously. GFI's funds for silvicultural renewal are derived from a charge on each cubic metre of wood cut. GFI is obligated to complete the renewal of previously harvested areas and maintain a minimum balance in the renewal trust fund, and the low harvesting levels have reduced inflows to the trust. The mitigating factor is that low current harvesting means few new silvicultural obligations.

During the audit period, GFI was able to manage the trust funds in such a way as to maintain the minimum balance and undertake the renewal and tending program, with the exception of the 2009 tending program that has been deferred in order to maintain the minimum balance. While this situation did not lead directly to any recommendations in this audit, it contributed to the context in which the audit was conducted.

Key challenges associated with conducting an IFA in such circumstances include:

- assessing the effectiveness of management responses when the challenges have been out of the ordinary;
- assessing the future direction and sustainability when the environment is extremely uncertain and there is a high probability that the forecast operational levels in the current FMP will not be achieved; and

- crafting feasible recommendations when corporate MNR is reviewing the foundations of the sector's institutional architecture and the sources of the problems, as well as the ultimate recovery, will largely be external to GFI and the Lakehead Forest.

We are well aware that everyone working in the sector is grappling with the same challenges.

One of the key issues on the Forest has been accessing the BBP. This has been a time-consuming point of contention since 1982, if not earlier. The 1999 and 2004 IFA's both contained recommendations related to this issue, and it led to 25 issue resolution requests during preparation of the 2002 FMP. With the approval of the BBP EMA Strategy in 2005, construction of winter access began in 2006. As of March 31, 2009, winter road had been constructed south of the Shesheeb Bay Wetland so that only 7 km remained to be constructed. The BBP is the last long peninsula extending into Lake Superior without all-weather road access, it is highly-valued by recreationists and includes two Provincially Significant Wetlands (PSW's).

In 1999, Ontario's Living Legacy (OLL) designated the majority of the BBP as an EMA in the fish and wildlife category, however the OLL provided no specific management direction. MNR, the Company and stakeholders were left to interpret a combination of general OLL direction and previous land use zoning, which created considerable confusion. Disputes during the preparation of the 2002 FMP and the lack of a management strategy for the EMA prolonged the controversy. Despite the approval of the Strategy by MNR in 2005, controversy has continued during its implementation, in part because the Strategy was not definitive about some key issues, such as signage and the type of water crossing structure to be installed at Five Mile Creek. Although the approval of the 2007 FMP and the extensive construction of the BBP primary road to date mean that the FMP is being implemented in accordance with the EMA Strategy, decisions and activities related to the BBP continue to generate tension between the parties. Sections 4.3 and 4.6 discuss this further; Recommendations #7 and #18 are intended to support management of the BBP.

Another issue that has created management challenges for both GFI and MNR is the shared jurisdiction over the Forest by the Thunder Bay and Nipigon MNR Districts. Because Thunder Bay is the lead district for planning, but the BBP is located in the Nipigon District, each District feels that it has primary authority for developing the management approach for the BBP. This and other points of disagreement have created an "ongoing struggling relationship" between the two districts, in the words of the minutes from the March 16, 2007 wrap-up meeting of the 2007 FMP Planning Team. As the meeting minutes continued, "both sides were quick to dismiss the others opinion, [and] the wall went up right away". It seemed indicative of the situation that no Nipigon District staff attended the wrap-up/assessment meeting, according to the minutes. We chose to report on this finding in section 4.1 (See Recommendation #1).

The 2004 IFA included a considerable amount of discussion regarding the two Local Citizens Committees (LCC's), one from each District, both of which participated in the development of the 2007 FMP (See Section 4.2). This effectively doubled the LCC-related amount of planning effort, since each met separately and, more importantly, had varying views on key issues. The LCC statement in the 2007 FMP reported that 10 of 11 Lakehead Area LCC members supported the plan, some with reservations, while 8 of

9 Nipigon West Area LCC members supported the plan with reservations. The Nipigon West Area LCC was amalgamated with other LCCs in 2007, which was an event of interest in this IFA.

A final issue that deserves some comment is the considerable area of highly productive land that has low stocking, predominantly of off-site and low quality hardwoods. This area often became like this after repeated high-grading many decades ago, sometimes worsened by the impacts of spruce budworm. The 2002 FMP identified a separate forest unit for these areas (Degraded FU), which totaled 2,748 ha, or just less than 1% of the available landbase. It is likely that the area of such stands is considerably more than 1% of the Forest, and includes a portion of the balsam fir, white birch and mixedwood forest unit areas. Recommendation #19 is intended to support revisions to the provincial management system that would provide for the restoration of productive forest on these lands, many of which are close to Thunder Bay and would be considered prime sites. Section 4.4 contains additional discussion of this issue.

3.4 SUMMARY OF CONSULTATION AND INPUT TO AUDIT

The audit team received a reasonable response from its solicitation for public comment. We received fourteen sets of comments via Canada Post and one e-mail response. Of the written responses, roughly half felt that the Forest was being managed according to the FMP, whereas the other half were unable to tell. Respondents were also about equally divided on whether the Forest was being managed sustainably; about 80% of the responses were concerned about the protection of values on the Forest, or felt that values such as wildlife were not being adequately protected.

The audit team had several meetings with overlapping licensees to discuss a wide range of forest management issues, with the key themes being suggestions to reduce costs and that MNR should work more closely with GFI and the overlapping licensees to facilitate forest operations while maintaining environmental quality. Several recommendations in this report resulted from these meetings. The audit team also had extensive meetings and discussion with GFI staff and MNR staff in Thunder Bay and Nipigon Districts, and some interaction with regional staff. The audit team sought the perspectives of all parties on the issues raised in this audit.

4.0 Audit Findings

The following sections of the report summarize the main findings by IFAPP principle. Appendix 1 contains a detailed discussion of the evidence that led to the development of the audit recommendations. Note that most descriptions of the IFAPP criterion and principle use text quoted directly from IFAPP. In other cases, the IFAPP text description is lengthy and has been summarized. To help the reader distinguish the source of the text, the quotations from IFAPP are italicized. The format of this IFA report is condensed compared with previous practice, and this report format tends to emphasize exceptions. At times this may overshadow the overall positive audit result, with good performance in many areas, especially operations. Forest management planning performance was improved compared with that in the previous audit period (1999 – 2004), although there is further room for improvement. The Lakehead Forest is complex, which produces numerous management challenges, and the deterioration of the economy during the later part of the audit period created additional stresses. The staff of the Company and

MNR, and other Forest stakeholders, are to be commended for their strong efforts during the audit period.

4.1 COMMITMENT

The audit team concluded that both MNR and GFI met the commitment principle. GFI's Mission Statement and commitments have been revised and signed by its Board of Directors, as suggested in the previous IFA. Its Mission is generally reflected in the daily activities of its employees. Likewise, MNR operates under legislation and has many policy directives that are supportive of SFM, and these are regularly updated to reflect new science, and generally improved. It was evident throughout the audit that MNR staff are also strongly committed to the wise stewardship of the Lakehead Forest.

Despite the evident commitment shown by the MNR staff, and the agency as a whole, the two MNR Districts hold some key differences in perspective on what constitutes an appropriate approach to managing the Forest. Exacerbated by personalities, these differences created inconsistency and uncertainty in several areas reviewed in this audit, as described in some of the following sections.

A protocol outlining the division of responsibilities of the two Districts has been developed which could improve the communication and coordination between the Districts. However, as previous audits indicate, this has been a long-standing issue and the auditors are skeptical that an administrative procedure alone will resolve the situation. Recommendation #1 is intended to assist with improving the working relationships and consistency of management between the two Districts.

4.2 PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT

MNR and GFI followed all requirements related to public and Aboriginal consultation, and other aspects of Aboriginal involvement. However, it was evident that meeting regulatory requirements is not a substitute for establishing and maintaining engagement.

As required by the auditing procedures, all documentation, correspondence, notices, ads, invitations to the two local Aboriginal communities, and invitations to inspect Annual Work Schedules are in place. The documentation regarding the formation of LCC's, their Terms of Reference, Purpose and minutes was reviewed and found in compliance with the requirements. The Annual Reports were presented to the LCC's and feedback from the LCC's to the 2007 FMP Planning Team (PT) was good.

Some of the issues that arose during planning were addressed informally but many of the most significant issues were related to access and were resolved formally through the issue resolution process. Procedures were followed and letters explaining decisions were available and reviewed. Members of the public were informed of their right to request an individual environmental assessment (IEA) related to the 2007 FMP, and six requests were submitted. Files and correspondence were reviewed and the auditors concluded that MNR followed the IEA process in all cases.

Interviews with seven Lakehead Area (LA) LCC members were conducted; of these two had been members of the Lake Nipigon West (LNW) LCC. LCC members represented their constituencies and had many discussions around issues related to access (by far the most contentious issue brought up by the public through issue resolution processes).

LCC members were very interested in the development of the BBP EMA Strategy, with the LNW LCC and Nipigon MNR District putting a priority on enhancing the wildlife resource on the BBP (as per the EMA designation), whereas it was felt that the Lakehead MNR District tended to place more weight on ensuring that logging could take place (also as per existing land use designation). In September 2007, MNR amalgamated the LNW LCC with other local LCC's. Three LNW LCC members joined the LA LCC, and one joined another LCC in Nipigon District.

The key audit finding related to the consultation process and Aboriginal involvement was that there was considerable scope to improve functionality and communication. Communication issues between the two MNR districts, as indicated above, created an environment where the approach to many aspects of consultation by the two Districts was inconsistent. In general, Nipigon District staff made more strenuous efforts to engage with the LCC, stakeholders, and Aboriginal communities than Thunder Bay District. While some Thunder Bay MNR staff were highly commended by LCC members we spoke with, there was nevertheless a sense among some LCC interviewees that some of the Thunder Bay MNR staff were dismissive of opinions offered by the LCC, especially those that were at variance to the perspectives of MNR.

During the interviews, it emerged that LA LCC members received little or no training /orientation on their roles, activities, procedures, etc. when they joined the LCC. New members were given the LCC Terms of Reference and past minutes to read but received no other guidance on the role of the LCC or its scope, or on the overall provincial forest management system. Members did receive considerable technical training but felt that they would benefit from training in the above-mentioned areas, as well as on developing improved committee skills. While the LCCs functioned quite well during the audit period, there was a sense of frustration among the members because they felt they could be more effective as an LCC if they better understood the forest system and their role within it, as well as the potential strategic implications of changes taking place in the sector. Recommendation #2 is intended to improve this situation. LCC members also expressed strong interest in having MNR continue to try to recruit a member from FWFN, and suggested that it would be beneficial overall if the LCC had some public profile within Thunder Bay. The audit team concurs with these suggestions and urges the Thunder Bay MNR District to identify measures that would publicize the LCC contribution, as public and stakeholder representatives, to managing the Forest.

The audit team found that communication had been variable between Thunder Bay MNR and local Aboriginal communities. During the audit period, Red Rock Indian Band (RRIB) wasn't actively involved in planning on the Forest, even though it harvested timber on the Forest and is actively seeking additional timber harvesting contracts. We understand that RRIB was focused on a neighbouring forest, however in September 2009, RRIB decided to become a SNLI member as GFI's ownership structure was being changed to reflect BFP's exit from the Company. In the early part of the audit period, Thunder Bay MNR felt it had a good relationship with Fort William First Nation (FWFN), but MNR staff spoke of "a wall going up" after a new Chief and Council was elected midway through the audit period. More recently, the previous First Nation leadership was elected again and communication lines have re-opened.

Unfortunately, neither community participated in the development of the 2007 FMP. Thunder Bay MNR followed the standard FMP consultation process and sent formal letters of invitation to the communities. While some further steps were taken to try to

bring them into the FMP process, these efforts seemed to reflect individual initiative rather than a strong desire on the part of the District to have the communities participate. MNR staff said that since neither community responded to the initial offer of enhanced consultation, they were not required to be more proactive (e.g. provide community meetings). Recommendation #3 is intended to lay a foundation for more constructive relationships.

Communications between Greenmantle and local Aboriginal communities were also problematic during the audit period. Staff of FWFN, which is a member of SNLI, were unaware of their role on the Forest. Communication efforts with them should have extended beyond letters. The situation with the RRIB was very confusing since Greenmantle staff talked with certain staff at RRIB but not to RRIB's LCC members. This created a lot of confusion and frustration on both sides. While the RRIB shared responsibility for this situation, given their apparently confused internal communications, GFI's communication approach nonetheless seemed to be *ad hoc*. Recommendation #4 is intended as a first step in improving the flow of communication, and it is observed that the September 2009 decision by RRIB to join SNLI and thereby become a shareholder in GFI provides an excellent opportunity for the Company and the community to discuss how to implement an effective communication process.

4.3 FOREST MANAGEMENT PLANNING

The Lakehead Forest is a challenging forest to manage. A high level of recreational use, the interspersed private and Crown land, and the division of the Forest between two MNR Districts (Thunder Bay and Nipigon) creates a complex backdrop to management. A greater effort for consultation was required, compared to many forest management units, because there were two separate LCCs during most of the audit period. Finally, since 2007 FMPs were the first plans to be required to fully follow the direction in the 2004 FMPM, interpretational issues related to the FMPM were an added source of challenges for the 2007 FMP planning team.

Thunder Bay is the lead District for the Lakehead Forest, however since the BBP is in the Nipigon District, Nipigon essentially has the lead on the most divisive management issue in the Forest. This creates challenges for MNR, and the audit team observes that in our extensive experience, which includes working on many forests that were in multiple MNR Districts, we have never seen a situation where the non-lead District has had such a prominent role in planning. Going into the 2007 planning process, all participants were aware of and eager to avoid the acrimony that occurred during the 2002 FMP planning process, most of which centred on management of the BBP. The terms of reference for the development of the 2007 FMP recognized these pitfalls, identified conflict resolution procedures and provided for the appointment of a facilitator.

The 2007 FMP planning experience was improved in comparison to the development of the 2002 FMP but it was still quite contentious. The dispute resolution mechanisms that were included in the Terms of Reference for the 2007 FMP were not used as effectively as had been intended. Only one BBP EMA issue was resolved through the BBP-specific resolution mechanism while other issues that perhaps should have been referred to this mechanism consumed considerable PT meeting time. In retrospect, it appears that the Steering Committee should have been asked to facilitate resolutions to controversial issues – it was never invoked during the planning process, largely because of the preference to resolve the issue within the PT. Having a trained facilitator in place may

have led to a better use of the resolution processes. Another concern was that some key PT members, most notably from the Nipigon District MNR, did not attend all of the FMP training sessions, which likely contributed to some of the conflict (See Recommendation #5).

Tension was also created during planning due to late Planning Inventory delivery (the Planning Inventory Checkpoint was attained 7 months late), a delay that from the beginning put considerable pressure on the PT and was never fully overcome. Problems were also experienced in obtaining some MNR input (e.g. it took six weeks for MNR to provide advice on SFMM modelling) (See Recommendation #6). The planning process was also delayed substantially while the PT members and advisors became familiar with the requirements of the (then new) 2004 FMPM. Although training materials were available, PT members found that these materials had not been fully enough developed to anticipate all possible circumstances encountered during planning, thus the FMPM needed to be interpreted by the PT in some situations. During plan development, the PT also had to deal with 11 issue resolution requests, mostly related to the issues identified above. In the end, the plan was approved on March 2, 2007, almost two months later than originally scheduled. The PT did very well to pull the process back closer to schedule after the delays in the early stages.

The BBP EMA Strategy was released in 2005. Completing it was a very difficult task made so not only by the land use issues, but also by the differing philosophies championed by staff from the two MNR Districts regarding the balance of management that was appropriate to meet the Strategy's intent.

The audit team reviewed the EMA Strategy and found it to be a comprehensive document; however its development and implementation demonstrated the need for the two MNR Districts to develop a better rapport and to provide consistent direction to GFI. The root source of tension is that the Thunder Bay District and LA LCC took a very different perspective on BBP access than did the Nipigon District and LNW LCC (see Recommendation #1).

As noted in the supplementary documentation of the FMP¹ *"the interpretation and implementation of the BBP EMA Strategy did result in some conflict amongst some planning team members and resulted in continual questions of concern being raised by members of the public"*. Consternation is also evident in the LNW LCC Statement at the start of the plan: *"Eight of nine members polled support the forest management plan with reservations. The reservations have to do with the lack of resolution with the Remote Tourism operation on the Black Bay Peninsula and ... [other issues]"*.

The audit team feels that the inadvertent outcome of planning on the BBP is to strongly discourage harvesting there. While it is somewhat early to be sure that this will in fact be the result, the audit team is concerned that access management direction has effectively removed the Peninsula from the land base available for timber harvesting, which is not the intent of the land use direction. The audit team has put forth Recommendation #7 in an effort to mitigate what it sees as the greatest source of risk and Recommendation #18 to review the BBP EMA Strategy once a longer period of time has elapsed.

¹ 2007 FMP, Supplementary Documentation 6.21. Summary of the Major Issues Encountered During the Production of the 2007-2017 Forest Management Plan

Other major issues that arose during planning concerned forest management operations adjacent to cottage lakes, recreation areas & other private land (e.g., Moose Lake Road corridor and associated harvest blocks), and the Whistle Creek Road extension. The audit team was informed that harvest operations conducted near communities, recreational areas, and in areas with frequent traffic experience a disturbingly high rate of theft, ranging from oil and gas to tires, trailers, harvested wood, and anything metallic. While the IFAPP does not have a directly relevant procedure, Recommendation #22 has been issued in order to initiate discussions on ways to mitigate the problem.

The 2007 FMP was reviewed for the manner in which ecological considerations are integrated with forest management. One of the key prescribed components involved providing for marten habitat through the use of the marten habitat guide². Due to the land use history of the area, the Lakehead Forest is highly fragmented, making it impractical to achieve all the objectives identified in the marten guide, primarily those related to size of habitat cores and the proportion of the forest which should be in cores. The audit team reviewed the detailed analysis undertaken by the planning team to attempt to find a reasonable balance between timber harvest objectives and marten habitat objectives³. The audit team is satisfied that the results of the efforts are reasonable given the highly fragmented nature of the Forest.

The audit team observed that the 2007 FMP does not allow for harvesting operations to take place within water quality areas of concern. Provincial policy allows for partial harvesting in water quality areas of concern around coolwater and warmwater bodies, and in prohibiting this, the audit team finds the plan to be overly cautious. There are environmental benefits to limited harvesting in appropriately selected riparian areas, and the draft Stand and Site Guide will permit harvesting to shore to occur more widely than current management guides. Recommendation #8 urges a less restrictive approach.

During preparation of the 2007 FMP, there were 11 requests for issue resolution. Many centred on the plans to access the Moose Lake area (which has high fisheries values) for forest operations. Through the issue resolution process, the MNR and GFI identified several mitigative measures primarily focusing on the development of access restrictions. In addition, operations were deferred until the 2nd five-year term covered by the plan to allow MNR to investigate issues related to ground water recharge and develop appropriate best management practices (BMP's). The issue resolution process was followed in accordance with requirements and the audit team believes that an appropriate course of action was identified. We note, however that it is vital that MNR expeditiously fulfill its commitments to ensure that the issue does not recur.

The number of FMP amendments and AWS revisions was reasonable for a complex forest such as the Lakehead. Throughout most of the audit period, staff from BFP used the MNR Forest Information Portal to submit planning documents and reports, but when BFP entered receivership, this responsibility fell to staff from Greenmantle. As SFL-holders have been required to submit more and more documentation to MNR through the Portal, GFI has lagged, especially with respect to amendments and revisions. A GFI staff person is working through the Portal training modules and imminently expects to be able to use the Portal to submit all required documents.

² Watt, W.R., J.A. Baker, D.M. Hogg, J.G. McNicol, B.J. Naylor. 1996. Forest Management Guidelines for the Provision of Marten Habitat. Version 1.0. Queen's Printer for Ontario. 27 p.

³ 2007 FMP, Supplementary Documentation 6.11. Analysis Package – Tab Document 8 – Application of the Forest Management Guidelines for the Provision of Marten Habitat.

4.4 PLAN ASSESSMENT AND IMPLEMENTATION

The general direction of the 2002 FMP was implemented. During the plan period, 50% of the 20,000 ha of planned normal harvest was achieved. In addition, almost 2,500 ha of salvage harvesting was conducted during the first two years of the plan term to make use of timber damaged during a 1999 windstorm; the Company and MNR were effective in utilizing a large portion of the blowdown. The area cut in the poplar and the jack pine dominated forest units was 71 and 75% of planned, respectively while at the other end of the spectrum, only 20% of the planned harvest area in the white birch forest unit was attained. On the entire forest, 50% of the planned area was harvested, which contrasts with the realization of 68% of the original planned harvest volume. There was wide variability in the level of achievement in individual forest units. It was especially notable that 98% of the planned volumes were achieved in both the poplar and jack pine forest units, suggesting that the volumes in these forest units were under-estimated. It is noted that in the 2007 FMP, the poplar yield curves were raised by about 20%.

In 2007-08, the harvest remained at the level of previous years (i.e., roughly 2,000 ha/yr) but the impacts of the economic slowdown were evident in the following year, when the area harvested fell to 1,500 ha/yr. In 2009-10, GFI estimates that the harvest will be no more than 1,000 ha. The reduction in harvest has led to a reduction in management fees collected by GFI, which is the company's primary source of revenue. If current conditions persist into 2010-11, GFI has indicated that it will face some difficult decisions. The audit team is aware that some other Ontario forest managers have proven to be adept at accessing funding from non-traditional sources, and we note that GFI has not pursued alternate funding avenues. We understand that pursuing such funding can be time-consuming and GFI has little staff time available for this task. As an alternative, a regional consortium of forest managers might consider engaging a fund-raiser to examine potential opportunities. Climate change, bio-energy and alternate employment are areas to potentially develop projects to access funds.

The funding shortfalls reflect the dependence of the system on continued harvesting; when the system was designed, no one anticipated such a severe disruption as we are presently experiencing. These issues are broader than the Lakehead Forest, and the tenure and stumpage pricing review (Fall - Winter 2009) being led by the Ministry of Northern Development, Mines and Forestry (MNDMF) may lead to modifications of the tenure and dues systems that may be beneficial to GFI. In recognition of this province-wide process, there are no recommendations on this issue in the audit.

There are several mechanisms in place that the Crown provides for collecting stumpage. One of these is that mills are able to sign agreements with the MNR to pay stumpage for the wood that they process. Crown charges on the majority of timber harvested on the Lakehead Forest were paid by the mills (the balance comes from some overlapping licensees that pay their Crown charges directly to MNR). On the Lakehead Forest, not only has the level of dues been reduced due to the lower harvest, but some mills and overlapping licensees have fallen behind on their payments. While payments to the Forest Renewal Trust Account were largely up to date as of March 31, 2009; almost \$300,000 in stumpage and \$88,000 in Forestry Futures charges was owing to the Crown. Some of this had been owed for a period of two years or more, and with the affected mills now in receivership, it is not clear how much the Crown will recover.

Harvesting activities were undertaken to a high standard on the forest. The auditors inspected approximately 25% of the area harvested during the five-year audit period (See Appendix 4) and found that the operations were conducted according to the FMP. There were no wasteful practices observed and site damage was minimal (minor rutting was seen on a couple of sites). Sufficient residual structure had been retained on all sites, meeting the requirements of the day. There was no evident slash pile management in place – the 2004 IFA had recommended that GFI develop and implement an effective approach to this, and this audit team felt that the Company's effort was not sufficient in that there was considerable productive area under slash on some recent harvest sites (see Recommendation #10).

The 2002 FMP included a "Degraded" forest unit, which comprised areas of the Forest with low volumes or low quality hardwoods (or both), often with considerable brushy competition. Many of these areas are inherently productive and are what were formerly called "prime sites", which are productive areas close to the mill. They typically became "degraded" through a combination of lack of renewal following harvesting decades ago and spruce budworm mortality. The intent of the 2002 FMP was that these sites should be restored to more productive stands. The Degraded forest unit contained 2,750 ha, or 0.85% of the Managed Crown Forest Area Available for Timber Production, and during the 2002 FMP period about 600 ha, or half of the planned harvest in this forest unit, was undertaken. Being rich sites, they are expensive to convert and the current forest management system does not have a mechanism for improving these sites. In this regard, we have included a recommendation (#19) directed at Corporate MNR/ MNDMF and we also point to the fund raising discussion above.

The Company's silvicultural program was generally excellent. The renewal treatments viewed by the audit team were well-executed, with complete site coverage and excellent rates of survival and growth. The Silvicultural Ground Rules (SGR's) in the 2007 FMP were appropriate for the Forest and were complete, with the exception of the SGRs for stand conversions, which are often considered as treatments for sites dominated by balsam fir or for mixedwood areas, but also may be appropriate for other forest units. One of the objectives of the 2002 FMP was "to identify current balsam fir and degraded stands on the Forest and, if desirable, convert them to other forest units". One of the strategies associated with this objective was to "develop detailed prescriptions for conversion activities". Considerable field experience with stand conversions has been gained by GFI since the inception of the SFL, and this experience had not been considered during the process of updating of the SGRs between the 2002 and 2007 FMPs. Recommendation #9 is intended to address this oversight. Tending was also generally done well – we observed patchy results on two sites but could not determine the causal factor. The 2009 tending program was deferred for a year, to conserve funds in the Renewal Trust Fund, and the audit team saw that on the sites scheduled for tending in 2009, a one-year delay would not be detrimental to the new stand.

When the amount of area planned for treatment is pro-rated by the proportion of planned area actually harvested, the silvicultural program was fully renewing areas that had been harvested or experienced natural depletions. The audit team observed that there were some errors in reporting natural renewal, and a recommendation has been provided (Recommendation #11). After clearing up errors in the calculation, the natural renewal rate supports the conclusion that renewal matches depletions.

The audit team inspected 73% of the primary and branch road length constructed during the audit period, including most of the road on the BBP. All were constructed as planned and quality was good, although there were some issues with some water crossings, as discussed below. The audit team inspected a sample of road construction and water-crossing installations which were funded under the Road Construction and Maintenance Agreement. All sites/work inspected was performed in a manner consistent with the company's invoices for the work.

The audit team inspected approximately 30 AOCs during the course of the field audit, primarily by aerial reconnaissance. We observed no violations of prescriptions. During the audit period, about 60% of the non-compliance incidents involved AOCs associated with water-crossings (unmapped streams crossed, not following construction plans, or improper installations) and incursions into AOCs. However, our review of the compliance records found that none of the infractions were significant, nor was there a systemic pattern of problems. The non-compliances were usually attributed to some form of human error. Recommendations #12, #16 and #17 are intended to improve future performance by ensuring that training and monitoring are effective.

The overlapping licensees made the point that both MNR Districts are very reluctant to consider the use of low-cost water crossing designs in circumstances where there are no safety issues and where there would be negligible negative environmental impacts. One frequently cited example was traditional winter crossings, made by compacting snow and ice to form a crossing over small creeks and streams. There is understandably a concern that crossings should avoid creating environmental impacts, but there are circumstances where the default approach of installing a culvert can cause more damage and also be much more expensive. Recommendation #21 is intended to prompt a reconsideration of crossing approaches where low cost solutions would be appropriate.

The 2007 FMP includes prescriptions for 27 different types of values. As described under Recommendation #1 in Appendix 1, the use of the Moose Cover Habitat AOC differs significantly between the Nipigon and Thunder Bay Districts. The AOC is employed in the Nipigon District, but not in the Thunder Bay District. This difference figures into the rationale for Recommendation #1. Other AOCs of note are those which are used to protect existing peregrine falcon nests and nesting sites, as well as potential nest sites. The Lakehead Forest has the highest concentration of peregrine nests / nesting sites in the province, making the use of these AOCs notable.

4.5 SYSTEM SUPPORT

This audit identified a number of training issues, resulting in five recommendations on this theme. Three of these recommendations are directed at the Company, which lacks a strategic training plan for its staff (Recommendation #14), and should re-tool its water crossing construction training to reduce the rates of non-compliance that have been encountered (Recommendation #12). Recommendation #13 is designed to improve the consistency of direction provided to GFI on the Forest, and to indirectly improve lines of communication between the major parties. Recommendation #17 is intended to assist the Company in tracking the delivery of training to the staff and contractors employed by the overlapping licensees.

The auditors also found that there was little training or orientation provided to new or existing LCC members, and not all of the planning team members had taken all of the appropriate FMP training. Recommendations #2 and #6 are intended to provide constructive direction on these issues.

In general, document control measures used by the Company and MNR were satisfactory. A lack of data quality control measures was evident with respect to the reporting of naturally renewed area – a number of errors and omissions were identified, as well as some confusion caused by the increasing gap between first and second pass harvests. Recommendation #11 was provided to assist the Company in ensuring it reports accurate figures.

4.6 MONITORING

Greenmantle Forest Inc. has an excellent system for silvicultural effectiveness monitoring. Field surveys, both formal and informal, are conducted at various stages in the management of a stand. These include:

- development of FOPs, based on information collected during harvest inspections, combined with post-harvest surveys;
- quality assurance surveys conducted on site preparation, tree planting and seeding projects;
- tending needs assessments;
- regeneration surveys, which are conducted on all treated sites, 2 years after intensive treatments, and 3-4 years after extensive treatments;
- acquisition of supplementary air photography for tending blocks combined with field visits to assess effectiveness of treatments; and
- free-to-grow surveys, which are conducted 5 to 10 years after the renewal treatment per the appropriate SGR's.

During the audit period, GFI completed the assessment of 8,595 ha for free-to-grow status, and during the 2002 FMP term, GFI assessed 11,640 ha, or 141% of the planned area. As described in section 4.5, the audit team uncovered some discrepancies in the mapping and annual reporting of natural regeneration areas. Tracking of silvicultural projects is integrated with GFI's GIS system, which is maintained by GFI's silvicultural forester. GIS layers are maintained for depletions, artificial and natural regeneration, and Class X, Y, and Z lands, which also contain information collected during surveys about site conditions and treatment requirements. The GIS records are used to facilitate the scheduling of treatments, or further surveys as required, as well as for annual reporting. Additional surveys are conducted to verify inventory attributes, and the entire suite of silvicultural assessments is well-integrated to ensure timely inventory updates for planning purposes.

MNR conducts quality assessments of GFI's silviculture projects through the normal compliance program. Each MNR District also has a quality assurance program in place to assess GFI's silvicultural effectiveness monitoring, which has been implemented and reported on for the past three years on the Lakehead Forest. In general, on the sites assessed by both parties, there was good correspondence between MNR's and GFI's results for free-to-grow status, as well as the stand attributes which are determined for inventory updating purposes (species composition, height, and stocking).

During the 2002 FMP term, GFI assessed 11,635 ha of normal harvest area for free-to-grow status. The proportion of that area which has now been declared successfully regenerated (free to grow) is 94%. Of the area declared free-to-grow, 78% would be considered to have achieved silvicultural success, that is, it regenerated to the forest unit(s) projected by the respective silvicultural ground rules. The lowest rates of silvicultural success occurred where the SGR's predicted conifer-dominated forest units, because a number of these regenerating stands contained a higher proportion of intolerant hardwood species than allowed for these forest units. However, the actual forest units were "close", i.e., had a relatively similar species composition compared to the projected future forest units. The audit team is of the opinion that these results are consistent with the management strategies contained in the 2002 FMP. It is premature to evaluate the results of regeneration assessments for the current FMP period, since only one annual report for that period was available at the time of the audit.

The auditors found that Thunder Bay MNR District had prepared the required Annual Compliance Operating Plans (ACOPs) throughout the audit period. Nipigon District had prepared ACOPs for only two of the five years (See Recommendation #15). This was part of what appeared to be a systematic problem in the Nipigon MNR related to completing the paperwork associated with compliance. The audit team also observed that there were a number of outstanding compliance issues that had been left open by Nipigon District staff, in some cases for as long as three years, there were no achievement data reported by Nipigon in its annual compliance effort report, and GFI had not received any response to two annual monitoring reports prepared under the terms of the BBP EMA Strategy. Despite the incomplete paperwork, evidence gathered through the audit team's inspection of field sites and compliance reports indicated that the level of monitoring being conducted by MNR provided sufficient oversight of GFI and the overlapping licensees. The audit team felt that the compliance efforts of the two Districts could be better synchronized with GFI (see Recommendation #16).

GFI was also required to prepare strategic and annual compliance plans throughout the audit period, which they did. In addition, the terms of the BBP EMA Strategy oblige GFI to conduct additional monitoring and reporting on operations carried out on the BBP. A separate monitoring plan was jointly developed by MNR and GFI, which includes a requirement to produce a separate monitoring report. GFI has prepared and submitted these monitoring reports as required during the audit period. The only deficiency identified by the auditors in GFI's compliance efforts was the lack of a mechanism to confirm the training received by overlapping licensees and their staff (See Recommendation #17). It is also suggested that GFI add some discussion in the compliance section of the annual report regarding how the Company intends to improve their operations in order to minimize instances of non-compliance.

The audit included sampling the Annual Reports produced during the audit period. All were found to have addressed the prescribed topics using the prescribed tables and formats. We note, however that the initial submissions were of moderate quality. MNR reviews, which were completed for every year, were very thorough and the resulting revisions by GFI produced significantly improved reports.

4.7 ACHIEVEMENT OF MANAGEMENT OBJECTIVES & SUSTAINABILITY

The auditors were asked to evaluate the achievement of management objectives from the 2002 and 2007 FMPs. We were readily able to evaluate the degree of success that

GFI had in meeting the objectives of the 2002 FMP, since the plan period was completed on March 31, 2007, mid-way through the audit period. All reporting from that period was completed and approved. The degree of achievement of the 2007 FMP objectives could only be assessed on a preliminary basis. Where an objective was such that it was largely met through the intent of the plan or the implementation of the planning process, a reasonably complete assessment could be provided. For objectives that are to be achieved over the course of the plan period, the audit team made an initial assessment based on two years of activity, but this is a very early assessment and may be subject to revision as a result of performance during the remainder of the plan period.

In general, the direction of the 2002 FMP was maintained during its implementation, but a number of specific objectives and targets were either not met or only partially met, due to various circumstances. For example, objectives related to the management of the BBP were not met due to delays in completing the BBP EMA Strategy.

During the 2002 FMP term, almost 10,000 ha, or roughly 50% of the planned harvest area was actually depleted. In addition, there was some 2,500 ha of salvage harvesting undertaken, with 97% of this coming in the first two years of the plan period. While the large amount of salvage harvesting mitigates the assessment of the Company's performance in meeting its planned harvest levels, the salvage might be considered as being equivalent to a natural depletion and so it did not contribute greatly to other plan objectives and targets. The auditors also determined that renewal kept pace with the harvesting, so that the sustainability of the resource was maintained in this respect.

The low proportion of the planned harvest area actually cut affected the achievement of a number of FMP objectives. There was an obvious impact on objectives related to harvesting levels and timber production, as well as on many renewal targets. The low harvest level also impeded GFI's ability to shift the relative frequency of disturbance sizes in the desired direction – by the end of the plan term, many of the larger cuts that had been planned were either incomplete or had not been started, with the result that there was little progress made towards the desired disturbance template. The ability of GFI to shift the forest composition in the desired direction was also limited by the below-plan level of harvest. The Company did plant far more red and white pine than targets called for. Although the inventory information shows a negative trend in white pine area from 2002 to 2007, the decline in area is evidently the result of adjustment in the area ascribed to that forest unit rather than a loss of real trees. Finally, objectives related to the maintenance of old forest were over-achieved due to the under-harvest, and those wildlife indicator species that favour older forest fared better than they would have under full implementation of the FMP.

There were several objectives in the 2002 FMP related to Aboriginal participation and values. While known Aboriginal values were protected during the plan term, the achievement of the other objectives was limited. On the whole, it cannot be said that either MNR Thunder Bay District or GFI have maintained good working relationships with either Aboriginal community on the Forest – this was discussed more fully in section 4.2 and the discussion leading up to Recommendations #3 and #4 in Appendix 1.

A noteworthy objective in the 2002 FMP was to "identify current balsam fir and degraded stands on the Forest and, if desirable, convert them to other forest units". During the 2002 FMP term, some 600 ha, or about half of the planned amount of area of these stands, was harvested and regenerated. These tend to be highly productive sites that

require two tending treatments, and FTG assessments conducted on these sites indicate variable success rates. Generally, although the areas were successfully regenerated, they tended to have a larger hardwood component than specified by the silvicultural standards. "Degraded" stands were not separated into a single forest unit in the 2007 FMP, but harvesting has continued in these stands. The auditors hope that GFI can continue these conversion treatments when opportunity permits; Recommendation #19 is intended to support activities that enhance forest productivity on degraded sites.

As detailed in Appendix 2, the objectives of the 2007 FMP that are related to FMP content or process have been achieved, but any operational objectives cannot be reliably assessed because the level of harvesting on the Forest has remained low during the first two years of the plan term, averaging 50% of the planned harvest area.

The Supplementary Documentation for the 2007 FMP contains a summary of the RPFO produced for the 1997 FMP. The summary describes the extensive impacts of the 1999 blowdown and subsequent salvage operations on the achievement of normal harvest area and volume targets, as well as on other key operational metrics. The assessment of plan objective achievement generally concludes that despite the blowdown, forest management direction was substantially met or exceeded. The RPFO author concluded that the Lakehead Forest had been managed sustainably.

The Annual Report for 2006-07, the final year of the 2002 FMP term, was written as a Year Ten AR, although it used section 4.3 of the 1996 FMPM as a guide to assessing sustainability, as per the 2004 FMPM Phase-in requirements. Of the 13 measurable indicators, roughly half could not be meaningfully assessed, due to lack of data in all time periods, definitional changes, etc. For other indicators, no trend had emerged in the five-year analysis period. Overall, the assessment of the standard indicators did not produce much insight into the sustainability of management. The AR also included an assessment of the achievement of the 2002 FMP objectives, which was very similar to the conclusions that the audit team reached. The AR concluded that few trends were evident from the available information, limiting the author's ability to meaningfully assess the sustainability of management.

The Trend Analysis, which forms Appendix 7 of this report, is not required to provide an assessment of forest sustainability, but it does identify key trends. Perhaps the most significant trends identified in the Trend Analysis are the stable amount of area of productive forest, after inventory-related shifts are accounted for, and increases of the spruce and birch forest units coupled with decreases in the poplar and balsam fir forest units. Spruce area increased by 10,000 ha from 1997 to 2002 as a large amount of area was assessed as free-to-grow, and then declined by about 2,000 ha from 2002 to 2007 due to harvesting and disturbance (e.g. wildfire on the BBP). Poplar and balsam fir areas have declined due to a combination of harvesting and stand conversion – white birch is a forest type that has benefited from this. The Trend Analysis also confirms that renewal is keeping pace with harvesting and natural depletions.

The audit team's overall assessment is that the Lakehead Forest was managed within the bounds of sustainability during the audit period. The component of sustainability associated with Aboriginal participation was perhaps the weakest, as section 4.2 describes. Financial sustainability is also an issue, but GFI has in fact performed well in this regard compared to many other forest management companies in Ontario. The

audit team hopes that management can continue to maintain the health of the organization.

4.8 CONTRACTUAL OBLIGATIONS

The shortfalls in overlapping licensee payments to the Crown for stumpage, the Forestry Renewal Trust and the Forestry Futures Trust have been mentioned in section 4.4; GFI itself was up to date with all of its Crown payments as of March 31, 2009. The audit team commends GFI for being able to maintain the minimum balance in the FRT throughout during the audit period, however in 2009 the majority of the regular tending program was cancelled (i.e. deferred for a year) to ensure that GFI did not deplete the FRT to a level where it could not meet the minimum balance requirement.

The various arrangements for paying dues and trust monies to the MNR are complex and various, and have been complicated by BFP. The audit team discovered that GFI is not informed when mills fall behind on their Crown payments on wood originating from the Lakehead Forest. For GFI, having this information could crucially affect business decisions, and Recommendation #20 is to provide for the sharing of this information with GFI management.

The audit team found that the Aboriginal economic opportunities envisaged by GFI had not been taken up during the audit period, however a major change occurred when RRIB decided to join SNLI as a shareholder in September 2009. However, given the performance during the audit period, we recommend that GFI develop a communications protocol with each of the two communities as a basis for establishing a more mutually beneficial working relationship (Recommendation #4).

Finally, a number of the recommendations from the previous IFA have not been completely addressed. A recommendation related to the management of the BBP was not fulfilled due to the late development of the EMA strategy. Two recommendations requesting improvements to the RPFO to make it more informative were not acted on; the rationale being that the RPFO had met requirements and been approved. This lack of response misses the point that the previous audit team felt that the RPFO discussion should have been enriched before the RPFO was approved. The Company had expended little effort to develop a slash management program – the audit team thinks it is a dubious strategy to expect a meaningful demand for slash for bioenergy. Recommendation #10 is intended to encourage the Company to minimize the loss of productive area due to slash and chipper waste.

Other contractual requirements were reviewed and found to have been met – Appendix 3 contains a detailed assessment of the obligations and our evaluation of Company performance.

4.9 CONCLUSIONS AND LICENCE EXTENSION RECOMMENDATION

This audit has reviewed the management of the Lakehead Forest between April 1, 2004 and March 31, 2009, a period that covered the last three years of the 2002 FMP term, the development of a 2007 FMP, and the first two years of activities under that plan.

One of the themes in this audit is the need to improve communication and working relationships, which in retrospect is not surprising considering that the Forest is very

complex. There are two actively involved MNR Districts, there were two LCC's during most of the audit period, and there are numerous overlapping licensees and forest users. The Forest is also interspersed with parcels of private land, including many cottage lots and is heavily used for recreation. Management of the BBP has long been a high-profile regional issue. As a result, we identified a number of situations where relationships were not what they should be, and developed five recommendations which we hope will provide a basis for more constructive working relationships. These recommendations would not be needed if the various parties truly felt that it was to their advantage to communicate better, cooperate, and compromise in some situations. As one example, since many MNR staff have difficulty finding the time to get into the field, it would make sense for them to cultivate relationships with people who are often out in the forest, such as the overlapping licensees. There is a lot of talent and energy in the organizations that are active on the Forest, and the audit team feels that this creates some excellent opportunities work cooperatively and improve management.

A closely-related theme is training – there are another five recommendations that deal with training or have a training component to them. Training is an important part of making full use of available human resources, and again the audit team found numerous opportunities for gains. As forest management gets ever more challenging, comprehensive, targeted investments in staff skill sets will yield high returns.

In total the audit team has provided 22 recommendations, as well as one to extend the licence. Of these, five are directed at one or both of the MNR Districts, seven are directed to the Company, and seven are intended for the MNR and the Company jointly. Corporate MNR is the principle party in the remaining three recommendations.

In summary, the audit team concludes that management of the Lakehead Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Greenmantle Forest Inc. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #542460 for a further five years.

Appendices

Appendix 1 – Recommendations

Independent Forest Audit - Recommendation #1**Principle 1: Commitment**

Criterion 1: *To determine whether the organization is committed to sustainable forest management as evidenced by its adherence to applicable legislation and policies and whether the commitment to SFM has been articulated in its corporate policy.*

Procedure 1.1: *Review the organizations policy statements including whether ... it is reflected in the daily operations of the unit and its employees.*

Background Information and Summary of Evidence: Through the course of this audit, it became apparent that the Thunder Bay and Nipigon MNR Districts have a "struggling relationship" regarding key issues on the Lakehead Forest and do not provide consistent management direction to GFI. This dynamic was most apparent in connection with the BBP, and can be seen as an outgrowth of the partition of management responsibilities between the two Districts (Nipigon District is the lead in planning and overseeing access and operations on the BBP, however Thunder Bay District is the lead District for the Forest) as well as an indicator of the downside of centralization, where staff from Nipigon District are more keenly aware of the BBP's special value than many of the Thunder Bay District staff, some of whom have never set foot on the BBP. An LCC member perhaps expressed it best, when he described the Nipigon MNR as thinking that more needed to be done to enhance the wildlife values and retain the remoteness of the BBP, whereas the Thunder Bay District staff interpreted direction in the EMA Strategy to be less restrictive regarding logging. In any event, there was acute disagreement between the two Districts during the development of the 2002 FMP, and it re-surfaced when it came time to reflect the various elements of the EMA Strategy in the development of the 2007 FMP. The differences in opinion do not seem to get resolved, and the working relationship frequently seems to become impaired. For example, this was discussed in the minutes of the final 2007 FMP PT meeting (See Recommendation #6) and it was evident in the interviews undertaken by the audit team.

The considerable, unbridged professional differences between the Districts regarding appropriate management approaches create difficulties for the Company. Given the on-going nature of the issues around the BBP, it is clear that these differences in approach will continue to impede planning and management activities. Management direction regarding wildlife habitat is also different between the Districts and provides a second example of dramatically varying direction. For a long time, Nipigon District has highlighted the importance of moose winter cover through the use of an AOC prescription, which provides considerable management discretion to MNR biologists. The values map for the Forest shows that scores of areas of winter moose cover have been identified in the Nipigon part of the Forest and none have been identified in the Thunder Bay part of the Forest. District staff attributed this to different professional opinions regarding the role of winter habitat in moose population regulation.

Discussion: While a certain level of divergence of opinions can be very helpful from a professional development perspective, when the differences are significant and there is no movement toward compromise, the result is conflicting management direction and tension. Such a situation not only makes management more complex for the Company, but reflects poorly on the MNR.

Conclusion: Differences between the two MNR Districts were alluded to in the previous audit report and in its recommendations. The Steering Committee which was struck during the development of the 2006 FMP could have played a role in resolving some of the conflicts but it was never called upon to meet or become involved. Therefore, despite some efforts to deal with the situation, it is obvious that more concerted efforts are required.

Proactively addressing this issue is an appropriate role for the MNR Region.

Recommendation: MNR Northwestern Region shall become actively engaged in facilitating improvements in the rapport between the Thunder Bay and Nipigon MNR District staffs and in developing an approach to providing consistent management direction on the Forest, beginning with the treatment of late winter moose habitat. In addition, the terms of reference for the development of the 2012-2017 operating plan, or the next major plan product, shall provide for a Regional role as an adjudicator of major disagreements.

Independent Forest Audit – Recommendation #2**Principle 2: Public Consultation and Aboriginal Involvement**

Criterion 2.1: LCC Purpose and Activities: *Review the [2004] FMPM related to LCC purpose, membership, organization, terms of reference, administration, reporting and documentation.*

Procedure 2.1.2 LCC Purpose and Activities: *Review and assess whether the LCC met the purposes and conducted its activities in accordance with the applicable FMPM. Include the following:*

- *Effectiveness of LCC involvement ...*

Background Information and Summary of Evidence: There were two LCCs for the Lakehead Forest during the development of the 2007 FMP: the Lakehead LCC and the Lake Nipigon West LCC. In September 2007, the Lake Nipigon West LCC was amalgamated with other LCC's; three members joined the Lakehead LCC. Supp Doc 6.22.2 in the 2007 FMP is the Lakehead Area LCC report, and it includes a comprehensive list of training, information sessions, and other meetings and workshops that the LCC has participated in. While the list is extensive, the training sessions focus on technical aspects of resource management. During interviews it was found that LCC members received little or no training/orientation on their roles, activities, procedures, etc. and that they desire to have some training along these lines. LCC members reported that when they joined the LCC, they received a stack of documents including the Terms of Reference and past minutes, and were told to read these in order to become familiar with their role. One person who had been an LCC member for more than 5 years said he still did not understand the overall forest management and licensing system, which limited his ability to participate as fully as he would like. Despite these concerns raised by the LCC membership, the audit team felt that the LCCs performed well during the audit period – the implication is that they feel they could be even more effective.

The 2004 FMPM states that the "MNR will ensure that training material on the roles and responsibilities of the committee, and forest management planning matters, is available" to the Local Citizens Committee. Training designed to improve the functionality and effectiveness of the LCC was also identified as lacking, and this was confirmed at the presentation of preliminary IFA findings to the LCC on October 6, 2009.

Conclusion: The process of recruiting LCC members needs to be followed up with an effective training/orientation process in order to provide adequate guidance and clear expectations. It is difficult for the LCC to be effective if their only guidance is to be handed a stack of documents containing the Terms of Reference, Purpose, minutes etc. In addition, existing LCC members have expressed a wish for training to improve their functionality and effectiveness as a committee.

Recommendation: In consultation with the Lakehead Area LCC, MNR Thunder Bay District shall develop and implement a training/orientation program for new LCC members and provide training to existing LCC members to improve committee functionality and effectiveness and provide an overview of the provincial forest management system.

Independent Forest Audit - Recommendation #3**Principle 2: Public Consultation and Aboriginal Involvement**

Criterion 2.5: Examines the involvement of Aboriginal communities in forest management planning and its benefits.

Procedure(s) 2.5.1 Aboriginal community consultation and involvement in FMPs, amendments, contingency plans: Review and assess whether reasonable efforts were made to engage each Aboriginal community in or adjacent to the management unit in forest management planning as provided by the [2004] FMPM and assess the resulting involvement and consideration in the plan or amendment.

Background Information and Summary of Evidence: The two MNR Districts (Thunder Bay and Nipigon) followed the procedures from the 2004 FMPM to try to engage the two Aboriginal communities, issuing all required letters of invitation and notices. A member of the planning team reported that he visited Fort William First Nation (FWFN) to seek their participation, but was not successful. While both communities appear to have had other priorities during the audit period [their reserve lands in the case of FWFN, harvesting on other forest management units in the Nipigon area in the case of Red Rock Indian Band (RRIB)], the fact remains that First Nations are not adequately engaged in the process. The RRIB was very frustrated with the process and the FWFN seemed unaware of the consultation process for the Lakehead Forest.

Other than sending formal letters to the two Aboriginal communities, MNR took few further measures to engage the communities. As an example, MNR could have offered to sponsor a community feast and open house in one or both Aboriginal communities during FMP development. MNR staff said since the communities did not respond regarding enhanced consultation opportunities, they were not required to make further effort to seek their involvement. Finding: As required in the procedures best efforts seem to be lacking in engaging First Nations in the area. While FMPM procedures were followed and invitation notices issued, there seems to have been a very minimalistic approach to dealing with Aboriginal communities.

Discussion: A number of factors contributed to the lack of effective participation from the two Aboriginal communities involved in the Lakehead Forest. On the MNR side, the two Districts seem to have different approaches resulting in confusing and unclear guidance. The Thunder Bay District seems to have had a minimalistic approach to engaging the Aboriginal communities. Although some of the current communication problems can be traced to the communities' own internal communications issues, staff changes and lack of resources, it seems that "ongoing reasonable efforts", as required in the 2004 FMPM, were lacking in communicating, building bridges and ultimately truly involving First Nations in the Lakehead Forest.

Conclusion: The key finding of this audit in terms of this procedure (Aboriginal involvement), was the very problematic communications that led to frustration for all involved, and that the development of a communication protocol with both communities would provide a foundation for a more stable communication process.

Recommendation: MNR Thunder Bay shall initiate discussions with Fort William First Nation to develop long-term approaches to working with and consulting with that community, and Nipigon and Thunder Bay MNR shall jointly, as per the cross-district protocol, seek to initiate similar discussions with the Red Rock Indian Band.

Independent Forest Audit - Recommendation #4**Principle 2: Public Consultation and Aboriginal Involvement**

Criterion 2.5: Examines the involvement of Aboriginal communities in forest management planning and its benefits.

Procedure(s) 2.5.1 Aboriginal community consultation and involvement in FMPs, amendments, contingency plans: Review and assess whether reasonable efforts were made to engage each Aboriginal community in or adjacent to the management unit in forest management planning as provided by the [2004] FMPM and assess the resulting involvement and consideration in the plan or amendment.

Background Information and Summary of Evidence: Communications between Greenmantle and Aboriginal communities was also problematic. FWFN staff was very unaware of their opportunities to participate on the Forest. Communications beyond letters should have been pursued particularly since FWFN is a member of SNLI. The situation with RRIB was very confusing since Greenmantle talks to certain staff at RRIB but not to RRIB's LCC members. This creates a lot of confusion and frustration on both sides. Nonetheless communication seems to be *ad-hoc*, although RRIB's recent decision to become a member of SNLI, and thereby indirectly a shareholder in GFI, may signify an interest in greater engagement.

Discussion: A number of factors contribute to the lack of effective participation from the two Aboriginal communities involved in the Lakehead Forest. Although some of the current communication problems can be traced to the First Nations own internal communications issues, staff changes and lack of resources, it seems that "reasonable efforts" were lacking in communicating, building bridges and ultimately truly involving First Nations in the Lakehead Forest.

Conclusion: The key finding of this audit in terms of this procedure (Aboriginal involvement), was the very problematic communications that led to frustration on the part of all involved.

Recommendation: GFI shall initiate efforts to develop separate communications protocols with the two local Aboriginal communities as a first step in improving communication.

Independent Forest Audit - Recommendation #5**Principle 3: Forest Management Planning**

Criterion 3.1: Did the establishment of a FMP planning team, which is a working body, with all members participating in plan production, meet 2004 FMPM requirements and the FMP terms of reference?

Procedure(s) 3.1.2.1: Assess the effectiveness of the plan author, planning team, chair and advisors

Background Information and Summary of Evidence: The planning process changed significantly between the 1996 FMPM and the 2004 FMPM, which should have entailed mandatory attendance of Planning Team members at all of the 2007 FMP training sessions. Interviews with Planning Team members, the plan author, the MNR District Manager, and reviews of the documentation (Planning Team minutes, 2007 FMP document and associated supplementary documentation, correspondence) led the audit team to determine that not all of the Planning Team members received appropriate training; had they done so, some of the disagreements that were encountered during the PT discussions might have been avoided. Specifically, a number of MNR staff from Nipigon District and a small number of staff from Thunder Bay District did not attend relevant training.

The planning ToR contained provisions for hiring a facilitator to help the PT, which was a good idea. Unfortunately, the first facilitator who was hired was inexperienced and was replaced after three planning team meetings by someone who was an experienced planner. The facilitator's role was to assist the MNR Area Forester and Planning Team Manager as required, perform a number of administrative and coordination roles, assist with the resolution of differences between planning team members, and inform the Steering Committee when their participation was required. As the 2007 FMP was being developed, disagreements on key issues began to hinder the effectiveness of the planning team. The minutes from the last planning team meeting, which included a wrap-up session, reported that staff from each District "were quick to dismiss the other's opinion, the wall went up right away. An improvement would be to listen, wait and respond later. Far too much time was spent bickering and not enough time planning. There was a lot of time spent rehashing old issues."

Conclusion: The lack of training on the part of some planning team members contributed to planning delays and exacerbated some of the disagreements that arose during plan development. The use of someone who is a trained facilitator may have also improved the planning process.

Recommendation: Thunder Bay and Nipigon District MNR and GFI shall ensure that all planning team members receive appropriate FMP training for the preparation of the five-year operating plan (covering the 2012-17 period), and that any planning team facilitation be provided by a trained facilitator.

Independent Forest Audit – Recommendation #6**Principle 3: Forest Management Planning**

Criterion 3.1: Did the establishment of a FMP planning team, which is a working body, with all members participating in plan production, meet 2004 FMPM requirements and the FMP terms of reference?

Procedure(s) 3.1.2.1: Assess the effectiveness of the plan author, planning team, chair and advisors

Background Information and Summary of Evidence: The many sources of information used to develop an FMP range from high-level forest and natural resource legislation and policy documents to guides for applying operational prescriptions to protect fish and wildlife values. Planning Team (PT) members and advisors were assigned to assemble specific pieces of background information and provide them to the appropriate individuals (reference: Appendix 2 in the Terms of Reference). Collecting most of necessary background information is routine, but some of it can be problematic to assemble, which was the occasional experience for this PT. For example, it took longer than anticipated to prepare the Planning Inventory. Obtaining information from advisors also sometimes occupied more time than desired. For example, obtaining advice on SFMM modelling inputs resulted in a six week delay in producing the Long Term Management Direction. Some of the information was received at late stages of the Planning Process (e.g. maps from MNR Nipigon District showing areas of moose cover habitat). The issues and shortcomings with the other forest resources background information are described in Supp Doc Section 6.5 of the 2007 FMP. Some Team members found they had insufficient time to review and discuss operational planning aspects in the final stages of the planning process. Contributing to this issue was that more time was exhausted discussing strategic issues than originally envisioned. Operations under the FMP were not approved to commence until April 23, 2007, roughly three weeks after the previous plan expired. The 2007-08 AWS was approved on April 24, 2007, so operations could not commence any earlier than 15 days following this approval.

Discussion: These delays created a need to compress the latter stages of plan production in order to achieve the completion date. Everyone involved in plan production was on a learning curve with respect to the implementation of the (then) new 2004 FMPM (Lakehead Forest was the first in Thunder Bay District to follow the new planning process). As a result, insufficient time may also have been allocated during development of the planning schedule for various tasks. Documentation shows that the FMP Production Schedule was revised three times over the planning process. The training materials that had been developed did not have the benefit of the experiences of applying the new planning process and inevitably some situations that arose were unforeseen and the MNR, Company and PT had to decide how they should be handled. Another factor for the delay was that the PT had to deal with 11 issue resolution requests.

Conclusion: Comparing the original checkpoint deadlines (in the first version of the ToR) to the actual dates of checkpoint achievement confirms the delays that had taken place and explains the need for the plan production schedule revisions; for example, the original target date for completing the scoping analysis was between July and Sept 2005 but it was only completed in early December 2005, a delay of three months from the latest date in the planning schedule. The planning team was able to catch up somewhat, but the process remained behind schedule e.g. the draft plan was submitted on Sept 18 2006, two months after the projected July 26 delivery date.

Recommendation: Thunder Bay and Nipigon District MNR and GFI shall ensure that appropriate steps are taken (e.g. allocate additional resources, provide additional training) to minimize delays in delivering the next major planning product for the Lakehead Forest (anticipated to be the 2012 – 2017 operating plan).

Independent Forest Audit - Recommendation # 7**Principle 3: Forest Management Planning**

Criterion 3.4.2: *To review and assess the development of the FMP long-term management direction (LTMD).*

Procedure(s) 3.4.2.5.2: *Assess the results of the social and economic assessment of the management strategy.*

Background Information and Summary of Evidence: The socio-economic assessment of the benefits from implementing the 2007 FMP was based on the harvest volume. Road access to the BBP is by winter road only, and harvesting operations can only take place after the frost has penetrated the ground to 35 cm or more, and the winter road has been prepared. A technical report that included an analysis of weather records from the 1950's to present (2004), prepared by MNR Nipigon, concluded that the "use of the winter road provides a viable access route for harvest purposes". Poor weather (i.e. a very short winter), equipment problems, delays due to regulatory issues, and rapidly changing timber markets are key sources of risk – the technical report considered the first source of risk in detail, and made allowances for equipment downtime. The third and fourth potential sources of risk were not considered. The audit team also thinks that the risk of warm winters is increasing due to climate change and that historical weather records provide an unreliable basis for establishing probabilities of future weather patterns. As a result of these factors, the audit team is concerned that the risk associated with harvesting on the BBP has been underestimated to the point where either little or no harvesting will occur or one or more overlapping licensees will experience operational difficulties or regulatory delays that could lead to wood and equipment being stranded over the summer on the BBP.

Discussion: Anticipating weather conditions is based on probability, and an accurate assessment of those probabilities only emerges after a considerably long record has become available. In a rapid period of climate change, assessing accurate probabilities is very difficult. The weather analysis was conducted rigorously however the audit team observes that the weather patterns show a marked shift in 1980 – in every previous year of the analysis period, the window for operations had been at least 80 days, but after 1980, only 60% of the winters offered more than 80 days. Only in five of the most recent ten years covered (1994 – 2004) did the operating window exceed 80 days, and it was 50 days or less in two of those years. While the majority of winters appear to provide ample time for operations, the amount of time available is less certain - when the potential for delays in approvals and other administrative processes, and rapidly shifting markets are included, the risk level increases. In the past two winters, overlapping licensees have evidently looked at the risks and decided not to harvest on the BBP. It is possible that this situation will continue. Should an overlapping licensee not be able to complete a (winter) harvest on the BBP and, more importantly, end up with cut wood stranded on the BBP over the summer, this could bankrupt the licensee since many are small and likely lack significant financial reserves. In other words, the audit team feels that harvesting on the BBP may be so risky that the wood is effectively unavailable.

Conclusion: The audit team thinks that MNR has underestimated the risks of harvesting on the BBP under the current arrangements. While more years of experience are required before one can be more certain of this conclusion, there seems to be additional measures that can be undertaken to reduce the administrative element of the risk equation. Recommendation #18 forms the other part of the audit team's view on this issue.

Recommendation: Thunder Bay and Nipigon District MNR shall work with GFI and affected overlapping licensees to develop approaches to minimize the potential for administrative delays to BBP winter operations.

Independent Forest Audit - Recommendation # 8**Principle 3: Forest Management Planning, and Principle 4: Plan Implementation****Criterion 3.5: Planning of Proposed Operations, and Criterion 4.2 Areas of Concern****Procedure 3.5.2.1:** *"Review the AOC prescriptions and assess whether:*

- *planning of AOCs followed approved forest management guides;"*

Procedure 4.2.1: *"Review and assess in the field the implementation of approved AOC operational prescriptions. Including the following:*

- *.....provide an assessment as to whether the AOC prescription was appropriate in the circumstances"*

Background Information and Summary of Evidence: The procedures noted above are generally intended to ensure that adequate protection is being provided to non-forest values. In this case, however, the procedures are used to reference a concern related to what may be an overly cautious approach to use of AOCs. The Timber Management Guidelines for the Protection of Fish Habitat (OMNR 1988) is cited as the basis for the water quality AOC prescriptions used in the plan. The plan's prescription notes that no forest management operations will take place within water quality areas of concern. The fish habitat guide, however, provides for limited harvesting in AOCs abutting coolwater and warmwater lakes and streams.

Discussion: The audit team believes that in prohibiting harvesting in AOCs in all circumstances, the plan's approach is overly cautious. There are instances in which harvesting next to shore will improve wildlife habitat by fostering the growth of shrubs and young deciduous trees – preferred food for beaver and habitat for other mammals and many species of songbirds. In addition, riparian zones often produce good quality trees, which can be harvested without causing damage to waterways or fish habitat, provided that appropriate care is taken, such as is outlined in the fish habitat guide. Furthermore, harvesting in riparian areas is more consistent with the general move to emulating natural disturbances than is a complete "hands-off" approach.

There is an understandable reluctance to conduct operations in riparian areas. The public can perceive the practice as environmentally unsound, and there can be nervousness about the consequences of poor implementation. Nonetheless, given the potential benefits of doing so, the Audit Team believes the MNR should facilitate the practice where appropriate opportunities exist.

We note that the forthcoming Stand and Site Guide includes guidelines for conducting harvest operations in riparian zones. However, given that the existing Fish Habitat Guidelines also provide opportunity for this, which was not employed in the present plan, inclusion of revised direction in the Stand and Site guide does not assure that such practices will be employed in the future. We believe the MNR and GFI should make efforts to employ the permitted practices.

Conclusion: The potential ecological and economic benefits of harvesting in riparian zones are being forgone by the plan's overly-cautious approach.

Recommendation: The MNR and GFI shall identify opportunities to undertake harvesting in riparian zones in the second five-year period of the 2007 FMP.

Independent Forest Audit - Recommendation #9**Principle 3: Forest Management Planning**

Criterion 3.5.4: FMP Silvicultural Ground Rules: *The FMP must contain silvicultural practices and ground rules relevant to specific forest conditions and objectives.*

Procedure 3.5.4.1: *Review the SGRs and preliminary prescription documentation of silviculture prescriptions and assess whether:*

- *treatments for harvest, renewal and tending activities and regeneration standards appropriately reflect the selected management alternative/management strategy for the FMP; and*
- *whether SGRs have been updated to reflect changes in practice gained from experience and forestry research.*

Background Information and Summary of Evidence: The 2002 FMP contains an objective (4.3) "to identify current balsam fir and degraded stands on the Forest and, if desirable, convert them to other forest units". One of the strategies (4.3b) associated with this objective was to "develop detailed prescriptions for conversion activities". Considerable field experience with stand conversions has been gained by GFI since the inception of the SFL, however, it was determined in interviews with GFI staff that this experience had not been considered during the process of updating of the SGRs between the 2002 and 2007 FMPs.

Discussion: The silvicultural prescriptions associated with conversion activities which we assessed in the field were appropriate for the site conditions, and seemed to be effective. Free-to-grow assessments conducted by GFI during the audit period on sites where conversion activities had been conducted indicated variable success rates. Generally, although the areas were successfully regenerated, there was a tendency for a larger hardwood component to have developed than is specified in the silvicultural standards. This is likely due to the rich nature of many of these sites, which often occur on clay soils in the southern half of the Forest. Lessons learned by GFI during the implementation of these activities have not been well documented nor has this knowledge been used to update the SGRs for the 2007 FMP.

Conclusion: There is a need to update SGR related to conversion activities, for all appropriate forest units, especially for mixedwoods and sites containing significant components of balsam fir.

Recommendation:

GFI shall use its local knowledge and experience and information from scientific research and silvicultural assessments to develop detailed prescriptions for conversion activities for all appropriate forest units. An FMP amendment shall be prepared to add any necessary and appropriate SGR's which are based on these prescriptions into the 2007 FMP in time for the preparation for the 2011/2012 AWS.

Independent Forest Audit – Recommendation #10

Principle 4: Plan Assessment and Implementation

Criteria 4.3 (Harvest) and 4.4 (Silviculture)

Criterion 4.3 addresses harvest operations outside of AOCs.

Procedure 4.3.1: *Review and assess in the field the implementation of approved harvest operations.*

Criterion 4.4 addresses renewal operations outside of AOC's.

Procedure 4.4.1 includes a requirement to “*assess the effectiveness of operations to reduce the areas of slash piles and chipping debris and treatments to regenerate these areas*”.

Background Information and Summary of Evidence: The 2004 IFA had recommended that GFI initiate a program to reduce the accumulation of roadside slash and woody debris resulting from harvest operations. This audit team felt that the Company's effort was not sufficient in this regard. The Action Plan from the 2004 IFA stated that the Company's response was to pursue biomass energy opportunities. Being located near Thunder Bay, there is a reasonable chance that a wood-based bioenergy project would draw some material from the



Lakehead Forest, and in 2007 roughly 15,000 m³ of slash was used for this purpose. However, in 2008, no slash was used. Moreover, the audit team observed that there was considerable productive area under slash on some sites that had been cut recently – the photo to the left shows an accumulation of slash and chipper debris beside harvest Block 234. The 2007 FMP states that, where practical, the area used for landings and slash piles will be regenerated, and this approach underpinned the FMP's assumption regarding the amount of land that would support second-growth forests. While many sites had little slash, there

were some that had amounts of slash that appeared to cover up to 7 – 8% of the cutover area, in contrast to the 0.5% factor used in the scoping exercise.

Conclusion: A program to manage slash and chipper debris on appropriate sites would reduce the loss of productive forest; approaches may include piling, burning, use for bioenergy, re-distribution on site, etc.

Recommendation: GFI shall develop and implement a slash/chipper waste management system to reduce the amount of productive area lost on the Forest.

Independent Forest Audit – Recommendation #11

Principle 4: Plan Assessment and Implementation

Criterion 4.4: *This criterion addresses renewal operations (site preparation and regeneration) outside of AOCs. ... Renewal operations must be conducted in compliance with all laws and regulations including the CFSA, approved activities of the FMP including SGRs, AWS and FOPs.*

Procedure(s) 4.4.1: *Conduct an examination of aerial photographs, FOIP reports, annual report information, including maps, for these operations... consider whether there are any gaps between the planned and actual levels of each type of renewal activity seen in the field; consider results of determination under Criterion 6.*

Background Information and Summary of Evidence:

Renewal (on Normal Harvest Areas)	2002-2007 Actual Activities on Harvest Areas (ha)	2002 FMP-25 Forecast of Activities on Harvest Areas (ha) (1)	% actual/ forecast
Natural Regeneration	3,152	5,586	56%
Artificial Regeneration	2,528	2,300	110%
Total Regeneration (Even-aged)	5,680	7,886	72%

(1) pro-rated to reflect the actual normal harvest levels (50% of planned)

A comparison of the area on which renewal activities were conducted during the 2002 FMP term with the planned area indicates a shortfall in the level of natural regeneration. This is partly offset by an increased level of artificial regeneration, but the total area regenerated is 28% lower than planned. (The forecast levels of renewal areas presented above were pro-rated to reflect the lower-than-planned level of harvesting that was completed during the 2002 FMP term.) Further analysis by GFI staff revealed several errors and omissions in the annual reporting of natural regeneration areas, caused by improper coding in the GIS database, as well as some areas that were missed. GFI does not have any quality control procedures in place to catch these types of errors and omissions. Another factor that reduced the area of natural regeneration for the FMP term was the use of two-pass harvesting systems. Due to the economic conditions of the past several years, the delay between harvest events in the two-pass system has lengthened, from an average of one year to as much as 3 or 4 years. This leads to a delay in the reporting of natural regeneration, since the harvest area is reported on the first pass but the natural regeneration is not reported until all harvesting is completed.

Discussion: It is difficult to assess progress towards meeting renewal objectives given these factors.

Conclusion: There is a need for GFI to develop and implement a system of quality control for the reporting, identification and mapping of natural regeneration areas on both normal harvest and natural disturbance areas.

Recommendation: GFI shall develop quality control measures for the reporting, identification and mapping of natural regeneration areas on both normal harvest and natural disturbance areas. These measures shall be implemented in time for the preparation of the 2009/2010 Annual Report. In addition, GFI shall develop and implement a procedure to ensure that all areas have either received renewal treatments or are carried over to the next five-year FMP operating period. This procedure shall be completed in the final year of each five-year period during Annual Report preparation.

Independent Forest Audit – Recommendation #12**Principle 4: Plan Assessment and Implementation**

Criterion 4.7: Access – Road construction, various types of water crossings including crossing structures, road monitoring, maintenance, aggregates and any other access activities must be conducted in compliance with all laws and regulations, including the CFSA, and approved activities of the FMP, AWS.

Procedure(s) 4.7.1: Review and assess in the field the implementation of approved access activities. Include the following:

- select a representative sample of each type of access activity (road construction, various types of water crossings – winter, culverts, bridges ...)... constructed during the five-year period of the audit”

Background Information and Summary of Evidence: During the course of inspecting water crossings we found a range of quality in the installations. While many were well-installed, there were also a number which did not adhere well to the direction in the Environmental Guidelines for Access Roads and Water Crossings. The main issues we observed: inadequate use of rip-rap (see figure below), poor seating of culverts relative to water depth, and improper culvert length.



Two examples of inadequate use of rip-rap on culverts (Arrow River culvert replacement, crossing WC2832-4086 (left), and crossing 50 (7034-3367) in the vicinity of Sandstone Lake.

Discussion: Crossings on the Forest are installed by individual shareholders/ overlapping licensees, not by the SFL-holder. The wide variation in quality of crossings indicates that more effort is required to ensure all culverts are installed to appropriate standards. Implications of inadequately installed culverts include damage to aquatic habitats and safety hazards (i.e. erosion of roadbed at culvert locations).

Conclusion: Additional effort is required to ensure culverts are adequately installed.

Recommendation: GFI shall review the level and type of training provided to overlapping licensees on construction of culverts and revise as necessary to ensure that all culverts are installed to appropriate standards.

Independent Forest Audit - Recommendation #13**Principle 5: System Support**

Criterion 5.1 (Human Resources): *Awareness, education and training programs are necessary to ensure current general knowledge as well as knowledge specific to an individual's responsibilities in the sustainable forest management (SFM) system.*

Procedure 5.1.1: *Review and assess, including through interviews, the organization's commitment to awareness, education and training programs and whether individuals involved in the SFM system are current with legislation, industry and government regulatory requirements and standards, and the organization's policies and objectives specific to their responsibilities. Include consideration of:*

- *extent of communication by the organization to employees (MNR or SFL holder), subcontractors, overlapping licensees*

Background Information and Summary of Evidence: As discussed in relation to Recommendation #1, it became apparent through the course of this audit that the two MNR Districts responsible for overseeing management of the Forest do not provide consistent management direction. The differences in opinion do not seem to get resolved, and the working relationship frequently seems to become impaired. The considerable, unbridged differences between the Districts regarding the best management approaches create difficulties for the Company. It is clear that these differences in approach have not been resolved and are exacerbated by personalities. We expect that they will re-surface to impede planning and management activities.

Conclusion: In addition to following Recommendation #1, which calls for the intervention of the MNR Region to facilitate some of the substantial differences in District perspectives, the audit team feels that the two Districts and GFI should look for opportunities to have trilateral meetings, rather than having GFI meet first with one District and then with the other. Opportunities for tri-lateral meetings include the annual operations start up meetings, various training sessions, and joint compliance inspections.

Recommendation: MNR Thunder Bay and Nipigon Districts shall actively pursue opportunities to meet tri-laterally with GFI to further improve working relationships and provide more consistent direction.

Independent Forest Audit – Recommendation #14**Principle 5: System Support**

Criterion 5.1 (Human Resources): *Awareness, education and training programs are necessary to ensure current general knowledge as well as knowledge specific to an individual's responsibilities in the sustainable forest management (SFM) system. A wide range of areas where training is required is mentioned in the criterion.*

Procedure(s) 5.1.1: *Review and assess, including through interviews, the organization's commitment to awareness, education and training programs and whether individuals involved in the SFM system are current with legislation, industry and government regulatory requirements and standards, and the organization's policies and objectives specific to their responsibilities. Include consideration of:*

- *adequacy and comprehensiveness of overall training program (i.e. planned training or ad hoc)*
- *nature, extent and periodicity of training courses and degree to which competence or knowledge is determined*
- *review training courses attended*

Background Information and Summary of Evidence: Interviews with GFI staff included discussion about training – a search for GFI's training records failed to turn up any documentation. Neither is there a training plan in place, which has led the auditors to conclude that training is largely conducted on an ad hoc basis, and there does not appear to be a long-term plan in place for each employee to further their professional and personal development. GFI employees received training as required regarding compliance and FMP development – the appropriate staff were well-trained in these areas. However, more general professional development training was rarely provided to employees. The auditors had the sense that the staff are generally kept very busy and there is a reluctance to forego work time to provide training.

Conclusion: While GFI staff are well-trained in the aspects that are required for them to do their day-to-day jobs, training is provided or sought on an ad hoc basis, with no comprehensive training plans or assessment of skills (and therefore the training) that are needed to work in an increasingly complex environment with increasing responsibility. Training records appeared to be absent, which provided further evidence that the Company's training program was underdeveloped.

Recommendation: GFI shall develop and implement a comprehensive training plan and program for staff and maintain records of training that has been received.

Independent Forest Audit – Recommendation #15**Principle 6: Monitoring**

Criterion 6.1: *MNR Districts are required to prepare District Compliance Plans that include monitoring and auditing forest operations and dealing with the results of compliance inspections conducted by SFL holders. As of April 1, 2006 these are one-year plans prepared annually.*

Procedure(s) 6.1.1: *Review the MNR District Compliance Plans in place during the term of the audit to determine how forest management activities were to be monitored by MNR and assess whether the actual level of the overall monitoring program was in accordance with the FMP/plans and whether it was appropriate based on evidence gathered through analysis of related criteria, including field audits.*

Background Information and Summary of Evidence: Districts are responsible for preparing Annual Compliance Operations Plans (ACOPs) that are consistent with the Regional Strategy's priorities and objectives. The auditors found that Thunder Bay District had prepared the required Annual Compliance Operating Plans during the audit period. Nipigon District had prepared ACOPs for only two of the five years.

The District ACOP includes an annual implementation schedule that lists compliance monitoring targets for each program administered by MNR (e.g., fisheries, wildlife, forests, lands, fire, and planning compliance). The plan schedule lists compliance activities, a description of the activity, the target measure, a quantified target, a District lead staff person and a completion date. The targets are normally established for each Area Team. Although not explicitly stated in the ACOP, it is assumed that outcomes are to be compiled and reported upon at the end of the year. The Thunder Bay schedules included the achieved target information (except for 2008-09, which had not yet been compiled), while the Nipigon District schedules did not include any achievement information. Further, a number of unresolved issues and/or "open" non-compliance reports requiring further attention were found for FOIP reports filed for the Nipigon District portion of the Forest. Some of these issues / reports have been outstanding for a considerable length of time – for three years in one case.

Lastly, in addition to the above strategic and annual plans, GFI is obliged to conduct additional reporting and monitoring for operations carried out on the BBP to ensure that the operations are implemented in accordance with the objectives and strategies of the BBP EMA Strategy. A separate monitoring plan has been jointly developed by MNR and GFI, which includes a requirement to produce a separate monitoring report. GFI has submitted two annual reports to date for 2006-07 and 2007-08. Nipigon District has yet to review the results of monitoring with the LCC, approve the two reports submitted to date, and forward the reports to the Regional Director, as required under the EMA Strategy. According to Nipigon District staff, they are satisfied with the reports and simply have not followed through with approving them. Considering the high level of interest in the monitoring results, sitting on these reports might come across as a lack of respect to other stakeholders.

Conclusion: The failure to complete several of the ACOPs during the audit period, close non-compliances and review and approve the BBP monitoring reports suggests that there are systemic issues associated with completing the compliance paperwork in the Nipigon MNR District that need the immediate attention of the senior Nipigon District staff.

Recommendation: The MNR Nipigon District Manager shall take appropriate steps to assess the reasons for the ACOP preparation and reporting/approval issues and develop a remedy, and ensure that all outstanding obligations identified in this audit (closing non-compliances, approving BBP monitoring reports) are completed.

Independent Forest Audit – Recommendation #16**Principle 6: Monitoring**

Criterion 6.1: *MNR Districts are required to prepare District Compliance Plans that include monitoring and auditing forest operations and dealing with the results of compliance inspections conducted by SFL holders. As of April 1, 2006 these are one-year plans prepared annually.*

Procedure(s) 6.1.1: *Review the MNR District Compliance Plans in place during the term of the audit to determine how forest management activities were to be monitored by MNR and assess whether the actual level of the overall monitoring program was in accordance with the FMP/plans and whether it was appropriate based on evidence gathered through analysis of related criteria, including field audits.*

Background Information and Summary of Evidence: One of the targets listed in each of the Districts' ACOPs is to conduct annual meetings with each SFL holder. Meetings with GFI are beneficial for reviewing / discussing forestry operational activities as they relate to compliance, exchanging information, developing new or amending existing protocols / policies / procedures, etc. Thunder Bay District has been successfully holding at least one meeting per year with GFI, except for one year. The ACOPs do not indicate if the meetings should be held jointly in the case where SFL boundaries transcend District boundaries, i.e. both Districts attend these meetings. The auditors believe this is a missed opportunity to ensure that GFI receives a consistent message from MNR on compliance matters and would strongly encourage both Districts to hold their annual meetings jointly with GFI. Such meetings may also help in discussing matters related to interpreting the seriousness of non-compliances discovered in the field, which has been an issue of contention at times between MNR and Company inspectors.

Conclusion: The consistency of the compliance system, and of operations on the Forest, would be improved if the annual compliance meetings included participation from both MNR Districts as well as GFI and the overlapping licensees.

Recommendation: MNR Thunder Bay, MNR Nipigon, and GFI shall conduct joint annual meetings to discuss compliance monitoring matters in order to facilitate consistent delivery of the compliance monitoring program on the Lakehead Forest.

Independent Forest Audit – Recommendation #17**Principle 6: Monitoring**

Criterion 6.2: *The SFL company shall prepare and implement a forest compliance plan for planning, monitoring, reporting and education / prevention on its forest operations and those of any overlapping licensees to ensure compliance with all applicable legislation, regulations, all manuals, all guides, the FMP, and AWS. Inspections and reports will be completed as required and in accordance with the approved compliance plan. The SFL holder will establish and deliver internal prevention/education programs and train staff to competency standards.*

Procedure(s) 6.2.1.2: *Determine whether an effective internal compliance prevention/education program which met MNR competency standards, was developed, subsequently delivered and available to all forest workers and partners.*

Procedure 5.1.1 is also relevant to this recommendation: *“Review and assess, including through interviews, the organization’s commitment to awareness, education and training programs and whether individuals involved in the SFM system are current with legislation, industry and government regulatory requirements and standards, and the organization’s policies and objectives specific to their responsibilities. Include consideration of ... adequacy of training delivered to subcontractors and overlapping licensees”*

Background Information and Summary of Evidence: One of the main objectives of GFI’s 2007-2017 Compliance Strategy concerns staff training, knowledge, and skills. The goals under this broad objective are to ensure all GFI staff and overlapping licensees are knowledgeable about provincial regulations, policies and guidelines for compliance, that all GFI staff involved in compliance and all overlapping licensees receive training, and to promote openness and communication between GFI, its overlapping licensees, and the MNR. A number of actions and strategies have been employed to achieve these goals.

Compliance monitoring training is delivered to all GFI employees. Compliance requirements are reviewed with overlapping licensees by GFI staff prior to work start-up. Overlapping licensees are expected to ensure that their employees receive forest compliance and relevant environmental awareness training prior to operating on their respective licence areas. GFI does not audit the overlapping licensees to ensure that this training is being provided.

Conclusion: Having front-line workers receive appropriate awareness training is important and GFI has a vested interest in ensuring that such training is being provided.

Recommendation: GFI shall establish and implement a mechanism for reviewing how well the overlapping licensees deliver environmental and compliance awareness training to their frontline staff and document the results of such reviews.

Independent Forest Audit - Recommendation # 18**Principle 6: Monitoring**

Criterion 6.4: Monitoring Indicators of Forest Sustainability: *To review whether programs are in place to ensure that data will be available for reporting on the FMP measurable indicators of forest sustainability.*

Procedure 6.4.1: *Assess whether programs are in place and are being implemented to provide sufficient data for all indicators identified in the FMP.*

Background Information and Summary of Evidence: Setting management direction for the BBP as outlined in the EMA Strategy, finalized in 2005, was a very challenging and significant accomplishment. As described in section 4.3, the EMA Strategy for the peninsula significantly affects the forest management plan in a number of ways. Supplementary Documentation 6.29 (Implementation of the BBP EMA Strategy in the Lakehead Forest 2007-2017 FMP) identifies the many strategies and objectives of the FMP which are directly tied to the EMA Strategy or strongly related to it, including those related to wildlife, fisheries, sensitive features, tourism, forest management, fire management and access.

Discussion: With tentacles into so many aspects of managing the Forest and broader land use, monitoring will be a key component of the Strategy's implementation. Although the EMA Strategy was not finalized during the period covered by the previous IFA, the auditors recognized the importance of the Strategy and recommended (Recommendation #4) that it be reviewed after five years to determine how it is impacting overall wood supply on the Lakehead Forest. As described in Recommendation #7 above, this audit team is also concerned about the potential impact of the Strategy on wood supply and management objectives for the BBP. Furthermore, given that the Strategy impacts so many aspects of the Forest, we believe that the review should extend into aspects of land use management beyond wood supply. In making this recommendation, we are not suggesting that the entire Strategy be thrown open for revision, but rather that the review be conducted in the spirit of ensuring that the Strategy is effective in contributing to the broad series of objectives related to it in the FMP.

The EMA Strategy itself addressed the issue of review, noting that "Planning is an ever-changing process. There is no intent to carry out a comprehensive review of the BBP EMA Strategy at any prescribed interval. Using adaptive management, the document will be kept current through periodic amendments resulting from changes in government policy, new resource information, failure to meet targets, or in response to public need." There is logic in citing the use of adaptive management to keep the Strategy current, however regular review and monitoring is a hallmark of adaptive management; adaptive management is no substitute for regular review.

The Action Plan Status Report on the recommendations of the previous IFA notes that "A review of the BBP EMA Strategy will be considered, as required by the Nipigon District staff". This ambiguous response does not meet the intent of the previous audit's recommendation, nor does it conform with the text in Supplementary Documentation Section 6.29 regarding the use of monitoring results to set more definitive access targets. A regular review is required to achieve accountability and ensure effectiveness.

On such reviews, it is customary for the lead District to be the one within which the subject area is located. In this circumstance, we feel that it would be preferable if the review was structured so that both Districts had to agree with the conclusions and any recommendations. One reason for this is that we would like to improve the dynamics of the working relationship between the two Districts, and since the BBP is a source of considerable tension, the audit team feels that a different structure to the review would be preferable. Secondly, the audit

team feels that the BBP is large enough such that the way it is managed affects the wood supply and achievement of many of the FMP objectives for the entire Lakehead Forest. With the MNR putting increasing emphasis on landscape level management, as evidenced by the imminent release of the Landscape Level Management Guide, this is another reason for having the EMA Strategy review structured as a partnership arrangement where both partners must agree with the conclusions and recommendations.

Conclusion: The response contained in the Action Plan Status Report does not adequately address the direction contained in the previous audit's recommendation or the current FMP.

Recommendation: Beginning in 2010, Nipigon District, in partnership with Thunder Bay District, shall lead regular five-year reviews of the BBP EMA Strategy, which will include GFI and other stakeholders as participants. The review shall include a determination of how the Strategy is impacting wood supply on the Lakehead Forest and all review recommendations and conclusions shall be supported by both Districts.

Independent Forest Audit – Recommendation #19**Principle 7: Achievement of Management Objectives and Forest Sustainability**

Criterion 7.5: *Conclusions regarding sustainability of the Crown forest: The auditor is to draw conclusions regarding sustainability of the management unit Crown forest. ... These conclusions are to be considered in the auditor's assessment of sustainability as well as all other audit criteria.*

Procedure(s) 7.5.3: *Based on consideration of audit results for all criteria and procedures in 7, as well as other audit findings, including forest management practices as viewed in the field, draw conclusions as to whether the implementation of operations provided for the sustainability of the Crown forest and document in the audit report.*

Background Information and Summary of Evidence: The 2002 FMP included a "Degraded" forest unit, which was comprised of area that had low volumes, low quality hardwoods, often with considerable brushy competition. These areas had often reached this state through a combination of poor historic harvesting practices and spruce budworm mortality, and where often inherently productive. The intent of the 2002 FMP was that these sites should be restored to more productive stands. The degraded forest unit area comprised 2,750 ha, or 0.85% of the Managed Crown Forest Area Available for Timber Production, and unfortunately only about 600 ha, or half of the planned harvest in these stands was undertaken.

Discussion: Many of the sites in this forest unit are what were formerly called "prime sites", which are productive areas close to the mill, and the Lakehead Forest has a considerable area of these types of stands. Because they are rich sites, they are expensive to convert and unfortunately the current system does not have a mechanism for improving these sites. Many of these sites were first harvested a century ago for their red and white pine, and have been periodically high-graded during the first half of the 20th century. This harvest history, coupled with a lack of an active renewal program at the time, created the current under-stocked stand conditions.

There is no mechanism in the current system to address this situation. GFI noted that Forest Accord Item #11 does not provide enough incentive to harvest, let alone convert, low volume areas. It is not fair to impose on current overlapping licensees the cost of rectifying situations caused by past practices and the mandate of Forestry Futures does not really provide for forest restoration due to poor practices.

Recommendation: Corporate MNR and MNDMF shall consider the inclusion of mechanisms within a revised tenure system to encourage the development of more productive forests, including the restoration of forest stands/area that have become degraded through historic management practices and natural disturbances.

Independent Forest Audit – Recommendation #20**Principle 8: Contractual Obligations****Criterion 8.1.1: Payment of Forestry Futures and Ontario Crown Charges**

Procedure(s) 8.1.1.1: *Through a review of MNR statements determine whether the licensee paid up to date all amounts in the Ontario Stumpage matrix for Forestry Futures and Ontario Crown charges (stumpage).*

Background Information and Summary of Evidence: MNR provided the audit team with a table showing the amount of Crown charges owed by various overlapping licensees on the Lakehead Forest. Most licensees had paid the required amounts into the Forest Renewal Trust Account, which as of March 31, 2009 was owed some \$15,000 from all overlapping licensees. However, as of that same date, almost \$300,000 in stumpage was owing to the Crown and \$88,000 was owing to Forestry Futures Trust. GFI does not pay the Crown charges on behalf of the overlapping licensees – for much of the wood cut on the Lakehead Forest, the purchasing mills have an agreement with MNR that they will pay the Crown charges directly.

While this approach can be efficient, the audit team discovered that GFI is not informed when mills fall behind on their payments to the Crown for wood originating from the Lakehead Forest. From GFI's perspective, it would be most helpful to know which mills owe funds to the Renewal Trust, because these payments affect GFI's ability to implement its renewal and tending programs and to meet its minimum FRT balance requirement. In 2009, GFI postponed most of its tending program to avoid falling below the minimum balance in the Trust.

Recommendation: Corporate MNR shall revise the agreements it has with mills to pay Crown dues and renewal charges on timber that is processed to give the Crown the authority to notify the SFL-holder on a quarterly basis of amounts owing, and any other pertinent information, when a mill falls behind on its payments.

Independent Forest Audit - Recommendation #21

Principle 3: Forest Management Planning; **Principle 4:** Plan Assessment and Implementation

Criterion 3.5.8: FMP road planning; and **Criterion 4.7:** Access

The issue dealt with by the recommendation below is not directly covered by any of the criteria or procedures in the IFAPP, although it fits best under Criteria noted above. The IFAPP provides auditors discretion to address situations in which there is a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed. (We note, however, that the topic of this Recommendation is somewhat related to the requirements under IFAPP Criterion 4.7: Access).

Background Information and Summary of Evidence: As noted earlier, over the course of the audit, the audit team met with a number of overlapping licensees. During these discussions, they expressed frustration regarding the rigidity of MNR requirements related to water crossing construction in instances in which flows occur only seasonally, intermittently, or are generally very low. They also identified opportunities to construct snow pack winter crossings in certain circumstances. A key concern is the cost of meeting what they view as rigid and costly requirements that are not required to maintain human and environmental safety in every crossing situation. Overlapping licensees have suggested several alternative relatively low-cost designs that they feel are suitable in appropriate circumstances, and which MNR staff have not embraced.

Discussion: The audit team believes that there has been insufficient direct interaction between overlapping licensees and MNR for either party to fully appreciate the other's perspective and ideas. GFI is often viewed as the conduit for these interactions, and while this largely appropriate, the absence of almost any direct interaction between MNR and the overlapping licensees has created a lack of trust on the part of the overlapping licensees and a lack of awareness on the part of MNR. The issue related to watercrossing design is a good example of this (as is the topic of Recommendation #22).

There may be very legitimate reasons why the suggested watercrossing designs are not appropriate, however other MNR Districts more readily accept them and MNR has not provided convincing explanations. In their remarks to the audit team, MNR staff concurred that the use of low-cost crossings was probably warranted in certain circumstances. Further discussion is recommended on whether various low-cost crossing options could satisfy engineering and environmental concerns initially identified by the MNR.

Conclusion: The issues raised by the overlapping licensees regarding crossing requirements and the ideas put forward to deal with them should be discussed fully and in an organized manner with the MNR.

Recommendation: In conjunction with GFI, Thunder Bay and Nipigon MNR shall organize and facilitate discussions between themselves and the overlapping licensees to examine the potential for low-cost water crossing construction options.

Independent Forest Audit - Recommendation # 22**Principle 4: Plan Assessment and Implementation**

As with the previous recommendation, this issue dealt with by this recommendation is not directly covered by any of the criteria or procedures in the IFAPP, although it fits best under Principle 4. The IFAPP allows the auditors discretion to address situations in which there is a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed.

Background Information and Summary of Evidence: Over the course of the audit, the audit team met with a number of overlapping licensees. During these discussions, they described instances in which their property had been vandalized or stolen and harvested logs stolen. Logging machinery is normally left on site over the course of operations (as it is impractical to remove it at the end of each working shift) and is naturally unattended for periods of time when operations are not being conducted (i.e. weekends, nights, etc.). Because much of the Forest is so close to Thunder Bay, there is a reasonable level of traffic on the logging roads presenting opportunities for dishonest people. Overlapping licensees described to the audit team that their efforts to block the roadway leading to active operations had been rebuked by MNR staff. In discussion with the audit team, MNR staff cited concerns regarding restricting public access to areas and regulations primarily related to the Public Lands Act.

Discussion: Given that management of the public land base is the responsibility of the MNR they should play a role in helping overlapping licensees deal with this very legitimate concern. MNR staff noted that they have offered to use 'stealth' cameras to catch criminals in the act of committing violations, but this approach seems somewhat cumbersome (cameras need to be placed in appropriate locations, many cameras sited at different locations may be needed, and even if a criminal act was uncovered burdensome legal actions may be required, and damage to machinery may be serious leading to the process of dealing with insurance). A simpler approach likely involves restricting access during the course of active operations.

Conclusion: Overlapping licensees need the assistance of the MNR in ensuring the security of their property while it is in the bush. The MNR should lead the process of addressing this issue.

Recommendation: The Thunder Bay and Nipigon District MNR, in consultation with GFI and overlapping licensees, shall identify and facilitate implementation of simple, practical measures to address the issue of vandalism and theft of property (including harvested timber) left on site during periods when harvest operations are being conducted.

Appendix 2 – Achievement of Management Objectives

Table A2.1. Review of Achievement of 2002 FMP Objectives.

Objective	Auditor Assessment	Auditor Comments
Forest Diversity		
Broad Forest Diversity Goal: Manage for a healthy, diverse and productive forest	In general, the FMP promoted the broad biodiversity goal while implementation supported some objectives more than others.	
1.1 To manage forest composition and age class distribution in order to maintain a healthy, diverse and productive forest.	There were stand and landscape level components to this objective. The stand level component entailed leaving snags and residual trees and patches in harvest areas, which was done at the standards under which the FMP was written and approved. The operations approved in the FMP would have shifted the composition and age class in the direction of the Null Run benchmark; with only about 50% of the planned normal area harvested, some of the expected compositional shifts did not occur as planned, however there will be greater areas of older forest than planned.	The NDPEG, which came into effect on the Lakehead Forest, requires that greater amounts of residual material, both as individual trees and patches and peninsulas, be left.
1.2 To show movement towards a landscape pattern that emulates natural disturbance (wild fire).	The FMP direction was to increase the relative frequency of larger harvest areas to create more larger disturbances, bringing the number of disturbances by size class into closer alignment with the template suggested by MNR (based on an analysis of fire history). The 2006-07 AR shows the planned, actual and suggested disturbance frequency by size, and indicates that limited progress was made towards the target distribution. The primary achievement was that the mid-sized disturbances in Ecoregion 4W were close to the planned levels, whereas more smaller harvests than planned were made on both units.	The past harvest practices and fragmented nature of the landbase limit the rate of convergence to the template.
1.3 To develop and maintain a forest age class distribution for all species, similar to a natural disturbance pattern.	The primary challenge to meeting this objective is to maintain older stands on the forest. Table AR-1 from the 2006-07 AR shows that the proportion of planned area that was harvested was lower in the older age classes than it was in the younger ones, supporting more old forest retention than was planned. This was especially so in the spruce lowland, other conifer, spruce upland and mixedwood forest units.	The underachievement of planned harvest levels, coupled with the propensity to harvest younger stands, led to a greater level of achievement of this indicator than planned.
1.4 To manage red and white pine forest ecosystems in accordance with "A Conservation Strategy for Old Growth Red and White	The intent of increasing the amount of red and white pine on the forest was achieved during the 2002 FMP period. GFI planted 152,000 white pine and 1.9 million red pine seedlings during the plan period, exceeding the 100,000	The Trend Analysis indicates that the area of the white pine forest unit declined from 628 ha to 402 ha from 2002 to 2007, while the area of red pine

Pine Forest Ecosystems for Ontario"	<p>and 800,000 seedling targets, respectively. The audit team also noticed that red and white pine trees were frequently retained on a wide range of harvest areas. All components of GFI's silvicultural program are well-suited to meet this plan objective, and field implementation has been very good.</p> <p>The silvicultural monitoring program identifies sites with pine components and other areas which are suitable for pine management, and helps to develop appropriate treatments on a site-by-site basis. Historical records of pine occurrences and past management history provide focus for field surveys which are used to evaluate sites where pine is not currently present, but can be restored to the landscape. Areas containing concentrations of pine, which may be too small to be shown on the forest inventory, are identified and mapped by field surveys, and are retained on the landscape. Inventory updates are conducted as required.</p> <p>Silvicultural prescriptions to maintain or enhance red and white pine presence on sites that we assessed in the field were appropriate and effective.</p>	increased from 1,826 ha to 1,886 ha during the same period. Since only 1 ha of the white pine FU was harvested during the 2002 FMP term, the decline is not attributable to excessive harvesting.
Social and Economic Matters		
2.1 To support local economic and social interests through sustainable management of the forest for industrial, commercial, tourism, and recreational opportunities to assist in maintaining the economic viability of Thunder Bay, Nipigon, Red Rock and the surrounding area.	<p>This is a very general objective and various stakeholders would undoubtedly have differing perspectives on the degree of its achievement. Many of the strategies identified in support of this objective relied on processes within the FMP development process. The formal FMP consultation process was followed as per the FMPM, providing input from a wide range of stakeholders into the FMP. The major shortcoming in this regard concerned a lack of participation by the two Aboriginal communities. In addition, two LCCs were maintained and provided considerable input.</p> <p>Requirements of many users were met through the development and implementation of Area of Concern (AOC) prescriptions in accordance with various legislative and guideline requirements. Visibility analyses were conducted proximate to lakes where concerns were identified by the public (e.g. cottaging lakes) and harvest boundaries adjusted. In some cases, road locations have been modified and appropriate use management strategies developed to address other user requirements.</p>	Communications with First nations was particularly problematic. Achievement of this objective may be weaker in the case of First Nations. In addition, there was considerable opposition to any road access of the BBP and those who held this perspective felt that their interests were not accommodated.

2.2 To support the economic and social interests of First Nation Communities (Fort William First Nation and Red Rock Indian Band) through sustainable management of the forest for industrial, commercial, tourism, and recreational opportunities.	Timber allocations have been provided to FWFN that are not being used. While they were not a member of SNLI, RRIB felt that they had not had a satisfactory allocation during the audit period. In 2007-08, they were issued a licence for 11 ha (1,500 m ³) but in 2005-06, they were issued a licence for 150 ha). During the audit period, they harvested approximate 9,500 m ³ from the Forest, with 2005-06 being the year of most activity (6,375 m ³ cut). In September 2009 they became an SNLI member and will have a larger allocation under SNLI's new shareholder structure. During the audit period, neither community would consider that their economic interests have been well supported on the Forest. This audit found that communications between the Aboriginal communities and MNR on one hand, and GFI on the other, were problematic. A seat on the 2007 PT was available for each Aboriginal community but neither was represented at any PT meetings.	The strategies to achieve this objective were not especially effective during the audit period. To some extent, this was attributed to greater interest on other forests (RRIB) and in other sectors (FWFN). RRIB's decision to become a member of SNLI offers a major opportunity to build a more positive relationship.
2.3 To make available a sustainable and continuous flow of wood fibre to the designated processing facilities as outlined in Appendix E of the SFL and to meet present wood supply agreements of Greenmantle Forest Inc.	The 2002 FMP did make available sufficient timber to meet the terms of agreements in Appendix E of the SFL. Great West Timber and Buchanan Northern Hardwoods received more than the minimum volumes of timber in the first 2-3 years of the audit term, indicating a satisfactory achievement during the 2002 FMP period. The commitment to the Levesque Plywood mill in Nipigon did not specify a volume to be made available.	
2.4 To utilize as much of the wood fibre from natural disturbance areas (i.e. fire, blowdown or insect damage) that is feasibly possible and within acceptable ecological limits	The Company harvested a large amount of salvage in the first two years of the FMP period, a continuation of the salvage effort begun after a large 1999 blowdown. By 2004, the wood quality had deteriorated to the point where little further salvage was feasible.	Only minor new salvage opportunities arose during the 2002 FMP period.
2.5 To optimize individual harvesting opportunities for all Greenmantle Forest Inc. shareholders on the Lakehead Forest	GFI provided harvest allocation to shareholders who harvested various proportions of their allocations, according to their level of interest and capability. In all, only 50% of the planned normal harvest area was depleted, although this is mitigated by the large amounts of salvage harvesting in the first two years of the FMP.	
2.6 To make available to the general public fuelwood collection areas.	An average of 500 m ³ /yr of fuelwood was cut on the Lakehead Forest for personal use during the FMP term.	An average of 6,400 m ³ /yr of fuelwood was harvested for commercial use during the plan period.
2.7 To maintain and update the forest resource inventory (FRI) by correcting any errors and verifying any inconsistencies found within	In general, the Company does a good job of maintaining the inventory, updating it regularly for harvest and natural depletions, forest operations, and FTG assessments. The exception to this positive assessment is the	

the digital FRI database	issue regarding the mapping and reporting of naturally regenerated areas, which was the subject of Recommendation #11..	
2.8 To protect cultural and heritage values on the Lakehead Forest.	The planning process protected known cultural values and there were no reports of forest operations harming cultural heritage sites. Use of herbicides is a concern for RRIB in terms of food and medicinal plants. MNR distributes appropriate notices of spraying areas and schedules.	
2.9 To manage the Black Bay Peninsula Enhanced Management Area in a fashion consistent with the land use intent outlined in the Ontario's Living Legacy	<p>The BBP EMA Strategy was approved in 2005, too late for use in developing the 2002 FMP. The issue was very controversial and resulted in numerous issue resolution and Individual Environmental Assessment requests – MNR prudently decided to defer any road building or timber operations on the BBP until the Strategy was completed.</p> <p>In February, 2005 the MOE (finally) responded to the requests for Individual Environmental Assessments (EA) related to the 2002 FMP, including three related to operations on the BBP. The decision stated that an Individual EA is not required for the BBP and ordered that following the approval of the BBP EMA Strategy, MNR was to review all aspects of the 2002–2022 Lakehead FMP pertaining to the BBP to determine whether any amendments are required. GFI reviewed the FMP and submitted amendment 66, which incorporated the EMA Strategy direction into the 2002 FMP. Road and water crossing construction on the BBP commenced during the winter of 2006–2007.</p>	This objective was not met, since the Strategy was unavailable. Completion of EMA Strategy in 2005 is a significant accomplishment. Recommendation # 18 identifies the need to implement a formal review process to ensure that the Strategy is functioning as intended.

Objectives Related to the Provision of Forest Cover

3.1 To maintain a forest landscape that provides suitable habitat for the featured species thereby providing habitat for other species that occur on the Forest.	The tools used in developing the 2002 FMP, including the range of provincial guides, supported the achievement of this objective. The planning team made a strong effort to provide a reasonable amount of marten core area, which was a challenge given the past harvesting history and fragmented ownership of much of the Forest. AOC prescriptions were appropriate to the values on the Forest. Compliance monitoring and inspections indicated no issues related to guide implementation. Forecast wildlife habitat predictions identified in table FMP-5 were within the limits identified as acceptable.	As described in Section 4.4, the actual harvest for the forest for the plan period was only about 50% of planned. Given that harvesting is the main anthropogenic driver behind forest changes that affect wildlife habitat, the projections in FMP-5 are not, in hindsight, applicable.
3.2: To manage forest cover within the Black Bay Peninsula Enhanced Management Area, consistent with the emerging	There has been limited harvesting activity in the Black Bay Peninsula to date, but the renewal prescriptions planned and implemented are appropriate to meet this objective. GFI also implemented several large	Appropriate SGR's are in place to meet the intent of this objective. Within the audit period, field implementation of renewal and tending treatments

direction of Ontario's Living Legacy and to use forestry activities to enhance wildlife habitat where required.	planting projects to ensure adequate regeneration of the 2001 wildfire. Also see discussion of objective 2.9 above	was appropriate for the site conditions and of good quality. Also see discussion of objective 2.9 above.
3.3 To provide forest cover that maintains Aboriginal cultural and spiritual values within the Lakehead Forest.	Considering the weak involvement from the two Aboriginal communities, it is not clear that the measures incorporated into the FMP made a contribution to maintaining Aboriginal spiritual and cultural values on the Forest.	
Silviculture		

4.1 To maintain the long term productivity of the Forest through harvesting, renewal and maintenance activities for white pine, red pine, jack pine, black spruce, white spruce, poplar, white birch, balsam fir, black ash, eastern white cedar and larch.	GFI has implemented the strategies associated with this objective throughout the audit period, namely, by conducting site inspections to evaluate site conditions, by developing appropriate silvicultural prescriptions based on this information, by matching different types of planting stock to the site conditions (mainly to ensure good performance of planted trees under different competitive situations), by maintaining a good seed inventory for all tree species from all seed zones, and by regenerating all normal harvest areas, as well as natural disturbances where salvage harvesting was conducted.	Site preparation, renewal and tending treatments that we assessed in the field were appropriate for the observed site conditions, and were of good quality. GFI's overall silvicultural program is sufficient to meet this objective.
4.2 To identify the current white and red pine components of the forest and, where feasible, restore white and red pine on appropriate ecosites	GFI's silvicultural monitoring program identifies sites with pine components which are suitable for pine management, and helps to develop appropriate treatments on a site-by-site basis. Silvicultural prescriptions for pine on sites that we assessed in the field were appropriate and effective. GFI has exceeded FMP targets for the planting of red pine and white pine seedlings during the audit period. For example, during the 2002 FMP term, a total of 1.86 million red pine and 153,000 white pine were planted on the Lakehead Forest. GFI's renewal support program is appropriate for meeting this plan objective and there is currently an adequate supply of both red pine and white pine seed to continue the planned program through the current FMP term and beyond.	GFI's silviculture program for red pine and white pine management is sufficient to meet this objective. Our field assessments of sites which were being managed for red pine and white pine indicated that the treatments were effective and of good quality.
4.3 To identify current balsam fir and degraded stands on the Forest and, if desirable, convert them to other forest units which better reflect a natural forest composition and age class structure.	GFI identifies degraded sites which are suitable for conversion, many of which consist of spruce budworm-damaged balsam fir stands, from the FRI and confirms them through field inspections. Information is collected during these assessments to assess the site-specific silvicultural prescriptions; in some instances GFI has made small modifications. Post-treatment surveys are also conducted to determine the need for tending	The silvicultural prescriptions associated with conversion activities which we assessed in the field were appropriate for the site conditions, were of good quality, and except as noted, were effective. However, lessons learned during the implementation of these activities has not been

	<p>or for supplemental renewal treatments. Since these sites often occur on rich, competitive sites, more than one tending treatment was implemented by GFI, where this was required to meet the silvicultural objectives.</p> <p>Free-to-grow assessments conducted by GFI during the audit period on these sites indicate variable success rates. Generally, although the areas were successfully regenerated, there was a tendency for a larger hardwood component than specified by the silvicultural standards to have developed. This is likely due to the rich nature of many of these sites, which often occur on clay soils in the southern half of the Forest.</p>	<p>documented or used to update SGR's for the current FMP. The 2002 FMP identifies the need to develop detailed prescriptions for conversion activities, however, this was not done for the preparation of the 2007 FMP.</p>
4.4 To cooperate with forest research and development agencies on the management unit.	The audit team did not encounter evidence that GFI had much interaction with forest research and development agencies.	

Table A2.2. Review of Achievement of 2007 FMP Objectives.

Objective	Indicator(s)	Auditor Assessment	Auditor Comments
1. To provide forest diversity in a manner that emulates a natural landscape pattern & frequency distribution.	1.1.1 Percent frequency distribution of forest disturbances by size class.	The FMP identifies that over the long-term, the desirable level is to establish harvest disturbances on the forest landscape consistent with the natural frequency distribution of disturbance size classes for the Lakehead Forest and emulate the natural disturbance template for the Forest, as determined by the MNR.	Table FMP-12 shows the current number of disturbances by size class, the template (long-term target) and the distribution of disturbance sizes at 2017. Progress is forecast increasing the frequency of larger disturbance areas at the expense of smaller one to bring the actual distribution more in line with the template. The FMP is projected to achieve the plan target in this regard.
2. To provide for a forest composition that is representative of the forest condition under a natural disturbance regime & similar to the historical forest condition & within the Bounds of Natural Variation (BNV).	2.1.1 The total area of Crown productive forest (available and reserved), by forest unit, over time. Numerous targets have been set by forest unit. 2.2.1 The second indicator is the area of minor forest units over time. The desirable level is, over the long-term, to ensure the total area of OH1 forest unit does not decline by more than 10% from its current level.	The target for 2.1.1 is to be achieved over a 100-year period. The desired direction of change is identified in section 3.6.1 of the FMP and Table FMP-13 shows the planned progress in the short, medium and long terms (i.e. in 10, 20 and 100 years). 2.2.1 This indicator is the area of OH1, the only "minor" forest unit identified on the Lakehead Forest. OH1 stays within 10% of the current area over the 100 year period.	Progress is made towards the long-term targets in all FU's in the plan period. The only FU that doesn't really achieve the intended outcome in 100 years is red pine, which is forecast to increase from 4681 ha to 4956 ha, although it reaches an area of 6105 ha after 20 years. The decline is attributed to the fact that 63% of the current area is in the 1-20 year age class and happens to succumb to mortality in 100 years time. Indicator 2.2.1 is an unusual choice for an indicator but was selected because it is the smaller FU and the PT did not want to lose it.
3. To provide for a forest maturity class structure	2.3.1 Area of Crown productive "mature" forest, by forest unit, over	The plan sets targets for the mature and old growth areas of each forest unit, on	The targets are decidedly unambitious in that to "meet"

that is representative of the forest condition under a natural disturbance regime & which is similar to the historical forest condition & within the Bounds of Natural Variation (BNV).	time. 2.4.1 Area of Crown productive "old growth" forest, by forest unit, over time.	both the entire forest and on the BBP alone. The targets are to meet or exceed the lower level of the Bounds of Natural Variation (BNV). The targets are met in all cases.	them, the area of mature and overmature forest is reduced dramatically from current levels in the case of some forest units (e.g. mature poplar forest area is projected to decline from about 45,000 to 33,000 ha over the 100 year planning period, despite an increase in poplar FU area from 75,000 to 105,000 ha during the same period..
4. To provide forest diversity that meets the habitat needs for values dependent on Crown forest cover.	<p>3.1.1 Increase the density of suitable marten habitat arranged in core areas on the forest over the long-term.</p> <p>3.1.2 Move toward the total capable forest landbase having 10 to 20% of suitable marten habitat in cores, over the long-term. See FMP-13 for detailed targets.</p> <p>3.1.3 Preferred wildlife habitat levels on the Mainland and Black Bay Peninsula EMA sub-management units to remain at or exceed 80% of the lowest level of the natural benchmark, over the long-term.</p> <p>3.1.4 Monitor levels of deer habitat on both the Mainland and Black Bay Peninsula EMA sub-management units, over the long-term.</p> <p>3.2.1 The area of habitat for forest-dependant species at risk in Ontario.</p> <p>3.3.1 The number of kilometres of drivable primary, branch and operational roads (combined) per square kilometre of Crown land not increase by more than 15 percent in the short-term.</p>	<p>3.1.1 – Comprehensive analyses of marten management scenarios described in the plan's supplementary documentation show that the area in suitable cores is predicted to increase from approximately 26,100 ha in 2007 to approx 33,800 in 2067; therefore this objective will be achieved</p> <p>3.1.2 As described above, the area of marten cores is projected to increase. Under the projection in the 2007 plan, by 2067 approximately 9.3% of the forest will be in suitable marten cores.</p> <p>3.1.3, 3.2.1 Inspection of the wildlife habitat predictions contained in table FMP-8 indicates that habitat areas for each of the selected species will not fall below the minimum acceptable identified.</p> <p>3.1.4 Habitat projections for deer are indicated in table FMP-13 and are based on modeling forecasts.</p>	<p>3.1.1 and 3.1.2 – Although the amount of core area is projected to increase, the cores include many that are smaller than those identified as preferred in the marten guide and also the total area never reaches the minimum 10% identified in the guide. However, as discussed earlier the audit team concurs with the sentiment expressed in the plan that given that the Lakehead Forest is very fragmented, the planning team, in consultation with MNR biologists decided that more modest objectives for cores than those identified in the MNR's Marten Guide were appropriate</p> <p>3.1.4 FMP-13 indicates that future assessment of monitoring (presumably in the annual reports) will be used to establish more definitive targets in future management plans.</p>

		3.3.1 According to the FMP, the road density on the forest is approx. 0.27 km/km ² . A 15% increase would increase the road density to approx. 0.31 km/km ² . Table FMP-22 indicates that 101 km of new primary and secondary roads are planned during the ten year period of the plan. Should those planned levels be constructed the total road density would be within the target.	3.3.1 The FMP notes that the 10-year Annual Report will contain an assessment of this objective.
5. To provide for healthy forest ecosystems.	4.1.1 The level of compliance (percent of forest operation inspections in "non-compliance" by category (minor, moderate & significant)) of the Company's forest management operations with the prescriptions developed for: the protection of water quality and fish habitat; the protection of natural resource features, land uses or values dependent on forest cover; the protection of resource-based tourism values; and the prevention, minimization or mitigation of site damage.	During 2007-08 and 2008-09, 26 of 374 industry and MNR compliance inspections had non-compliances associated with them, for a 93.0% compliance record. This is below the target of 95%. One incident was classed as moderate, the target was zero in the moderate or significant classes.	The auditors have identified Recommendations 12, 16 and 17 to assist the Company in reducing non-compliance rates.
6. To provide for community well-being.	5.1.1 Compliance with the FMP and land use direction in road access planning, construction, maintenance and use management strategies. 5.2.1 Percent of forecast volume utilized by mills. 5.3.1 Area of managed Crown Forest available for timber production. 5.4.1 Provision of opportunities for involvement of Aboriginal communities in plan development. See text (pg 146) regarding three	5.1.1 This indicator was already achieved during plan preparation 5.2.1 The FMP forecasts that its forecast harvest levels will be attained; the extremely low levels of harvest since the plan was approved suggest that achievement is likely to be below planned, quite possibly well below that level. 5.3.1 The SFMM ensures that no more	5.7.1 Although the intent of the desirable level for the objective is understandable, the lack of a quantitative component to the target makes its assessment too subjective to be of real value.

	<p>desirable levels.</p> <p>5.5.1 Local Citizens Committee self-evaluation of its effectiveness in Plan development.</p> <p>5.6.1 Opportunities for involvement provided to the general public and stakeholders in plan development.</p> <p>5.7.1 Km of operational forest access road per square kilometre on the Black Bay Peninsula EMA.</p>	<p>than the targeted proportion of area is lost to roads and landings – the FMP parameter of 2% over the next 30 years is appropriate.</p> <p>5.4.1 Weak involvement from First Nations.</p> <p>5.5.1 Both LCC's provided modest self-evaluations of their effectiveness during the 2007 FMP development process, especially relating to their influence on planning and the accessibility of the information they were required to process.</p> <p>5.6.1: Opportunities for participation were provided through the FMPM process.</p> <p>5.7.1 No targets are associated with this objective. Table FMP-13 describes the desirable level of roads as: "<i>Plan & construct operational roads only to the density required to conduct forest management activities on the BBP EMA, during the 2007-2017 FMP period, that will result in the least impact on the remote character of the area.</i>"</p>	
7. To provide for a sustainable harvest level.	<p>6.1.1 The long-term projected available harvest area.</p> <p>6.2.1 Long-term projected available harvest volume, by species group.</p> <p>6.3.1 Available and forecast harvest area, by forest unit (see text on page 147 for desirable level and target).</p> <p>6.4.1 Available and actual harvest</p>	<p>The projected harvest area and volumes by species group are on target; the projected SPF and Po harvest remain at current levels over the next 100 years. Only the white birch volume declines, from 60,000 m³/yr presently to 24,000 m³/yr in 2107. White birch only accounts for 15% of the current harvest</p>	

	area, by forest unit (see text on page 147 for desirable level and target). 7.1.1 The available and forecast harvest volume, by species. 7.1.2 The available and actual harvest volume, by species.	volume at present. In contrast, the planned harvest area declines from 3500 ha/yr at present to 2300 ha/yr in 2107.	
8. To maintain & enhance forest ecosystem condition & productivity through silvicultural practices.	8.1.1 The percent of harvested forest area assessed as free-growing.	The forecast for the assessment of regeneration success on harvested area for the 2007-2012 operational term of the current FMP is 31,825 ha. GFI did not undertake free-to-grow assessments during 2007/08. Preliminary data supplied by the Company indicated that 2,479 ha were assessed in 2008/09. Because this is only a small fraction of the area planned for assessment during the five-year term, it is not a suitable basis for drawing conclusions regarding performance in meeting this objective. In addition, GFI has begun field work on an updated inventory, which will provide information on regenerated areas in addition to the normal free-to-grow assessment program to be carried out over the next three years (2009-2010 to 2011-2012).	It is too early to assess progress towards this objective, since only one year of information is available for the 5-year period.



Appendix 3 – Compliance with Contractual Obligations

Licence Condition	Licence Holder Performance
Payment of Forestry Futures and Ontario Crown charges	As of March 31, 2009, Greenmantle Forest Inc. had paid up to date its Stumpage and Forestry Futures Trust Account. There was no outstanding balance at that time. However, as of March 31, 2009, a number of mills and overlapping licensees owed a total of approximately \$400,000 in dues, Renewal Trust and Forestry Futures Trust payments.
Wood supply commitments, MOAs, sharing arrangements, special conditions	There was one commitment to the Levesque Plywood mill in Nipigon, which resulted in an average of 2500 m ³ /yr going to the mill for the first three years of the audit period; the mill was destroyed by fire in 2007. Memoranda of understanding were over-fulfilled for poplar sawlogs and conifer roundwood to Buchanan Northern Hardwoods and Great West Timber, respectively, in the first three years of the audit period, before volumes demanded by those mills plummeted with deteriorating economic conditions. No volume was recorded as being sent to Atikokan Forest Products during the audit period. GFI met the terms of the wood supply commitments /MOA's during the audit period. There are no special conditions in Appendix F of the SFL.
Preparation of FMP, AWS and reports; abiding by the FMP, and all other requirements of the FMPM and CFSA	GFI prepared a 2007 FMP, annual work schedules and annual reports throughout the audit period as required.
Conduct inventories, surveys, tests and studies; provision and collection of information in accordance with FIM	GFI has an excellent program of silvicultural effectiveness monitoring in place to support its field operations. During the audit period, GFI completed the assessment of 8,595 ha for free-to-grow status, and assessed 11,640 ha, or 141% of the planned area for the 2002 FMP term. Additional surveys are conducted to verify inventory attributes, and the entire suite of silvicultural assessments is well-integrated to ensure timely inventory update for planning purposes.
Wasteful practices not to be committed	The audit team did not see any instances of wasteful practices and this has not been an issue in the compliance program during the audit period.
Natural disturbance and salvage SFL conditions must be followed	The CFSA and SFL requirements related to salvage harvesting were followed during the audit period. During the term of the audit, there was minimal salvage harvesting undertaken. During the first three years of the audit term, 6,145 m ³ were reported

	harvested as salvage, most of which was the final harvest from a large blowdown that occurred in 1999. In 2007-08, 8 ha of allocated area that blew down before it was harvested was salvaged.
Protection of the licence area from pest damage, participation in pest control programs	No pest control program was implemented nor required during the audit term.
Withdrawals from licence area	Not assessed – medium risk procedure.
Audit action plan and status report	The recommendations from the 2004 IFA that the audit team considers to have not been fully addressed are discussed below.
Payment of forest renewal charges to Forest Renewal Trust (FRT)	As of March 31, 2009, Greenmantle Forest Inc. had paid up to date its Forest Renewal Trust Account. There was no outstanding balance at that time. As of the same date, overlapping licensees owed at total of \$15,000 to the FRT.
Forest Renewal Trust eligible silviculture work	All Forest Renewal Trust eligible work that we assessed in the field was of good quality. The Specified Procedures assessment conducted by KPMG, which was completed for the 2006/2007 fiscal year, did not identify any errors in the company records for that year. We assessed 15.1% of the total area of the Specified Procedures sites in the field, sampling from all the activities that were conducted (site preparation, renewal, tending, and free-to-grow surveys) and found that all the treatments were in place, were properly identified and mapped, and were of good quality. We also verified the accuracy of the free-to-grow surveys conducted by GFI. We reviewed the silvicultural records for the remaining four years of the audit period, and found that all the expenses incurred were eligible and appropriate. GFI maintains well-organized records of its FRT-eligible activities, including the contractor invoices, records of eligible expenses, maps and project reports.
Forest Renewal Trust forest renewal charge analysis	GFI conducted the renewal charge analysis on an annual basis throughout the audit period, which was reviewed and approved by MNR District staff. As a result, the renewal rates for all species were increased for 2007/2008 to accommodate costs associated with the intensive treatment of salvage areas, and conversion activities. The renewal charge analyses, and the rate changes that were made, were appropriate for the silviculture program on the Lakehead Forest.
Forest Renewal Trust account minimum balance	The minimum balance requirement for the Lakehead Forest was met for each of the 5 years of the audit period, from March 31, 2004 to March 31, 2009.

<p>Silviculture standards and assessment program, including obligations on Class X, Y, and Z lands.</p>	<p>SGR's have been updated between the successive FMP's to reflect local knowledge and scientific advances, except as previously noted silvicultural prescriptions related to conversion activities.</p> <p>All of the class Y and Z lands on the Lakehead Forest have had any necessary treatments carried out in order to meet the silvicultural standards. At the time of the field audit, there were sites totaling 470.3 ha which remained to be assessed for free-to-grow status. GFI informed us that it is expected that these surveys will be completed in the current year (2009/2010). Once this is completed, all of GFI's contractual obligations related to Class Y and Z lands will be completed for the Lakehead Forest.</p> <p>GFI's silvicultural program is sufficient to ensure that silvicultural standards are met on all Class X lands on the Lakehead Forest. Class X lands include all areas harvested on the Forest since 1995.</p> <p>The audit team concludes that GFI has met its contractual obligations in regard to the silvicultural standards and assessment program.</p>
<p>Aboriginal opportunities</p>	<p>Opportunities were provided but due to poor communication Aboriginal communities did not take advantage of them during the audit period; in September 2009, Red Rock Indian Band joined SNLI, which also assumed 100% ownership of GFI at that time.</p>
<p>Preparation of compliance plan</p>	<p>GFI prepared annual compliance plans as required during the 2002 FMP term, and a ten-year strategic compliance plan during the 2007 FMP term.</p>
<p>Internal compliance prevention/education program</p>	<p>GFI maintains an internal compliance prevention / education element through the implementation of its compliance monitoring program. Compliance monitoring for forest operations is conducted by experienced GFI staff.</p>
<p>Compliance inspections and reporting; compliance with compliance plan</p>	<p>The auditors found ample evidence to support their conclusion that they are satisfied that GFI maintains an effective oversight role in the conduct of its compliance monitoring program on the Forest.</p>
<p>SFL forestry operations on mining claims</p>	<p>Beginning in 2005-06 the preparation of the Lakehead Forest AWS has included the application of appropriate procedures (FOR 05 0317 (Mining Claims)) to advise all recorded and patented claim holders located within the proposed operating area of the Company's upcoming forest management operations.</p>

The audit team reviewed the performance of the Company and MNR in addressing recommendations from the previous IFA. Where the recommendation has been partially addressed, or not addressed, we provide below an assessment of the situation. All other recommendations were considered to have been addressed and closed.

Forest Management Planning Recommendation #2. *The planning team chair shall promptly refer impasses to the Steering Committee for resolution or advice.*

As described in section 4.3, a Steering Committee was established for the 2007 FMP but it was never asked to provide advice or input on any of the issues that arose during planning, in essence perpetuating the same situation that was identified in the 2004 IFA. Since the 2007 FMP has been concluded and it is not anticipated that a Steering Committee will be designated for the process of producing the operating plan for the second five-year term, no related recommendation has been made.

Forest Management Planning Recommendation #4. *The Black Bay Peninsula EMA Strategy shall be reviewed by OMNR, five years after its implementation to determine how the Strategy is impacting the overall wood supply of the Lakehead Forest.*

As described in Section 4.3, this audit team is also concerned about the potential impact on wood supply. Furthermore, given that the Strategy impacts so many aspects of the Forest, we believe that the review should extend into aspects of land use management beyond wood supply.

Although the EMA Strategy itself addresses the issue of strategy review, we find the position put forth in it, that regular review is not necessary because adaptive management will be used to keep the document current, inadequate to ensure that the document remains relevant, is providing appropriate direction, and that the strategic direction is being followed. Regular review and monitoring is a hallmark of adaptive management. Portraying adaptive management as a substitute for regular review is inconsistent with the principles of adaptive management.

The Action Plan Status Report on the recommendations of the previous IFA notes that "A review of the BBP EMA Strategy will be considered, as required by the Nipigon district staff." This ambiguous response does not meet the intent of the previous audit's recommendation. A regularly-undertaken review is required to achieve accountability and ensure effectiveness.

With Recommendation #18, we reinforce the need for regular review of the Strategy.

Recommendation #6: *Greenmantle shall initiate a program to reduce the accumulation of roadside slash and woody debris resulting from harvest operations.*

The Action Plan identified that GFI would pursue opportunities for the use of roadside slash as bio-fuel, but the Status Report does not indicate any results until 2007-08, when approximately 15,000 m3 of slash was delivered to AbitibiBowater for biofuel. Given the state of the industry, it is questionable how much slash will be taken as biofuel over the foreseeable future.

Recommendation #10 has been issued to encourage the Company to be more proactive in dealing with this issue.

Recommendation #10: *Greenmantle must provide a more complete explanation for the sizeable over achievement in poplar sawlog production in the 1997-2002 Report of Past Forest Operations (RPFO).*

And

Recommendation #11: Greenmantle shall conclude its Report of Past Forest Operations (RPFO) with a fuller assessment and explanation of the sustainability of the Lakehead Forest.

For Recommendations 10 & 11 above, the Action Plan provided the following assessment: "... the RPFO met the requirements of the FMPM and was reviewed by the MNR for content and completeness. In addition, the 2007-2017 FMP, for which the RPFO was used as background information, has been approved. Therefore, no additional action for this recommendation is proposed." In essence, these recommendations were both ignored. The audit team feels that there is little point at this juncture to re-iterate the recommendations, however we hope that the auditees take the recommendations resulting from this audit more seriously.

Appendix 4 – Audit Process

Overview

The Crown Forest Sustainability Act (CFSA) directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit (IFA) contributes to this mandate, as well as complying with the direction to the Ministry laid out in the 1994 Class EA decision, subsequently confirmed in the 2003 Declaration Order⁴. Regulation 160/04 under the CFSA prescribes the minimum qualifications required by the audit team and sets out direction related to the timing and conduct of IFA's, the audit process and reporting. A more detailed description of the scope and process of an IFA is set out in the Independent Forest Audit Process and Protocol (IFAPP), which contains approximately 150 individual audit procedures.

The IFAPP, reviewed and updated annually by the MNR, states that the purpose of the audits is to:

- "assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;
- assess to what extent forest management planning activities comply with the Act and with the forest management plans, the manuals approved under the Act, and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and
- review and assess a licensee's compliance with the terms and conditions of the forest resource licence."

In 2009, MNR introduced a streamlined reporting procedure, which has been followed for this report. The body of the audit report provides very high level discussion of the audit process and results, with more detail on key aspects contained in the appendices. There are two key types of audit findings – recommendations and best practices. A recommendation is explicitly defined in the IFAPP as follows:

Recommendation - sets out "a high level directional approach to addressing [a] non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

⁴ Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

Recommendations can be directed towards the Company and/or at the appropriate administrative level of the Ministry of Natural Resources (District, Region or Corporate). Auditees must address all recommendations in follow-up actions.

If the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP states that "Highly effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices." In contrast, "situations in which forest management is simply meeting a good forest management standard" do not qualify.

Audit Procedures and Sampling

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. The procedures, which are the basis for assessing the auditees' compliance and effectiveness, are organized according to eight principles. A positive assessment of the procedures under each principle results in the principle being achieved. A negative assessment of a procedure typically leads to a recommendation.

IFAPP segregates the procedures into three classes based on the risk to forest sustainability should the management aspect covered by the procedure not be achieved:

- "low risk" - strictly administrative in nature;
- "moderate risk" - have an administrative component but also a bearing on sustainability; and
- "high risk" - related to sustainable forest management.

For each principle, the audit team is required to sample 20 – 30% of the procedures identified as low risk and between 50 – 75% of the procedures considered to be moderate risk. This risk-based approach is intended to reduce the auditor and auditee workload and focus the audit on more significant issues. The table below identifies, for each principle, the number of procedures in each risk class, the number audited, and the proportion that are audited. Note that because the Lakehead Forest has not been certified to a third-party certification standard, none of the IFA exclusions pertaining to certified forests are applicable.

Procedures Audited, by Risk Category								
Principle	Low Risk			Medium Risk			High Risk	Comments
	Applicable (#)	Selected (#)	% Audited	Applicable (#)	Selected (#)	% Audited	Audited (#) (100% Audited)	
1. Commitment	0	N/A	N/A	2	1	50	0	The requirement to demonstrate a commitment to meet legal and policy requirements was not

								audited, since our initial meetings and assessment suggested that both auditees would handily meet the terms of this procedure..
2. Public Consultation and Aboriginal Involvement	0	N/A	N/A	6	5	83	2	We opted to audit a higher percentage of medium procedures than required since we think these are important aspects. We opted not to assess whether public notices of inspections were issued, since MNR usually ensures that this is done properly.
3. Forest Management Planning	6	2	33	12	10	83	38	Low risk procedures regarding the content of the plan introduction, SEV briefing note, index to EA components of the FMP, and the plan's contributor page were not assessed since these are examined during plan review. Medium risk procedures related to documentation of the certification and approval of the FMP, and the plan description of the unit's physical features were also omitted for the same reason.
4. Plan Assessment & Implementation	1	1	100	1	1	100	9	All procedures under this principle were audited.
5. System Support	0	N/A	N/A	1	1	100	1	All procedures under this principle were audited.
6. Monitoring	0	N/A	N/A	7	4	57	11	Two procedures related to the electronic submission of FOIRs and a procedure related to MNR review of the annual plans were not assessed. Problems in these areas will be identified during the assessment of other procedures.
7. Achievement of Management Objectives and Forest Sustainability	0	N/A	N/A	2	0	0	15	Two medium risk procedures that only applied to the RPFO were not audited, since the Year Ten AR is available.
8. Contractual Obligations	0	N/A	N/A	4	3	75	8	In addition to the figures shown in the table, eleven criteria in this principle cross reference to procedures previously covered by other principles -we have audited all of them. A procedure related to the withdrawal of area from the licence was not assessed, since no area was withdrawn from the licence during the audit period.
Totals	7	3	43	35	25	71	84	

The audit commenced with the preparation of a detailed audit plan⁵, which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between representatives of the Audit Team, Greenmantle, MNR, and the Local Citizens' Committee (LCC). The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, and to select the sites to be inspected in the field during the audit.

The focus of the audit was an intensive six-day site visit, which included document review, interviews and inspections of a variety of sites throughout the Forest where activities had been undertaken during the audit period. The sites were selected by the Audit Team at a one-half day meeting following the pre-audit meeting, with some minor adjustments afterwards to ensure a balanced sample.

Sampling and Sample Intensity

The IFAPP required the Audit Team to sample at least 10% of the area treated during the audit period for each major activity, such as harvesting, site preparation, and regeneration. Activities that carried higher risk or that were only undertaken on relatively small areas were to be sampled more intensively. The audit exceeded the minimum sample size specified in the IFAPP for all activities, with the overall level of sampling ranging between 10.5% to more than 20% for key activities.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, year of harvest, season of operation, and silvicultural treatment packages. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were site prepared, seeded, planted, and tended, and those for which natural regeneration treatments were prescribed.

Table 1. Sampling intensity of the field operations, by key feature investigated.

Feature	Total in Audit Period *	Total Sampled	Sample Intensity %
Harvest (ha)	9,311	2,305	24.8 %
Site Preparation (ha)	5,229	841	16.1 %
Natural Regeneration (ha)	3,857	687	17.8 %
Planting (ha)	8,143	1,879	23.1 %
Seeding	0	0	0
Tending (ha)	9,242	1,028	11.1 %
Free-to-Grow Assess (ha)	8,112	852	10.5 %
2006 FRT Areas (ha)	6,947	1,050	15.1 %
Areas of Concern (no.) **	approx 30**	17	57 %
Water Crossings***	approx 50	20	40 %
Primary and Branch Roads (km)	19.4	14.2	73***

* Numbers are approximate as the final annual report for FY2008/2009 was not yet due at the time the draft final report was completed. Estimated values for 2008/09 are included in the table.

** Number shown is different types of AOCs. 2002 plan included 27 different types of AOCs, 2007 plan included 26 different types. Values covered by the two plans were dealt with by different prescriptions in some cases.

*** Includes aerial reconnaissance.

⁵ ArborVitae Environmental Services Ltd. Lakehead Forest Independent Forest Audit Plan, May 9, 2009.

The auditors were required to verify in the field at least 10% of the areas reviewed in specified procedures undertaken by KPMG for the 2006-07 fiscal year. We verified in the field 15% (1,050 of 6,947 ha) of the eligible silvicultural activities undertaken by Greenmantle in the year 2006/07.

Table 1 shows the total amount of each key activity that took place during the audit period, and the sample size and sampling intensity in the IFA. In the table, the total in the audit period refers to the areas that were harvested, site prepared, and renewed during the audit period. The next column to the right shows the total area of the treatments viewed during this audit. The sampling intensity is calculated by dividing the area of treatments viewed by the total area (or other relevant measurement statistic) during the five-year period.

The table is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the table. Although we viewed many individual harvest and/or treatment blocks during the field inspection portion of the audit, more than one aspect of forest management was inspected at some sites. For example, at sites where harvesting had taken place, harvest practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, of the area figures shown above, it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Summary of Consultation and Input to Audit.

The IFAPP also requires the audit team to seek public input into the audit. A sample of 350 individuals and groups, taken from the Ministry's district mailing list, was invited by mail (sent July 7, 2009) to provide input into the audit. Notices requesting comment were placed in three regional newspapers - Thunder Bay Chronicle Journal (July 4), Thunder Bay Source (July 4) and Nipigon Red Rock Gazette (July 7). LCC members were encouraged to solicit comments from the interest groups that they represent and communicate this to the audit team.

In response to these efforts, the audit team received fourteen replies via Canada Post and one e-mail response. Of the written responses, roughly half felt that the Forest was being managed according to the FMP, whereas the other half were unable to tell. Respondents were also about equally divided on whether the Forest was being managed sustainably; about 80% of the responses were concerned about the protection of values on the Forest, or felt that values such as wildlife were not being adequately protected. Two respondents felt that wildlife and other use values received an unnecessarily high level of protection.

The audit team, both as a group and individually (i.e. the lead auditor) had several meetings with overlapping licensees to discuss forest management issues. Some overlapping licensees were on the executive of SNLI and also on the Board of Greenmantle Forest Inc. Regardless of their level of participation in these two organizations, the main concern was the poor state of the forest industry and the implications for them. The overlapping licensees brought forward a number of suggestions that they felt would both reduce their costs and maintain the quality of management on the Forest, including the use of different water crossing structures in some areas, not leaving residual live trees standing in the harvest areas (because they

just blow over and are safety hazards), and developing a simpler process to remove from maps streams that don't exist. They also expressed concerns that individuals or small groups could delay planned harvests for years, and that MNR would not attempt to expedite a decision, that some raptors such as osprey nested in areas of high human activity and so the nest protection measures were overly severe, that the areas covered by peregrine falcon timing restrictions were excessive, and that there were high levels of theft of equipment, gas and oil, tools, and other items from work sites and they were not allowed to restrict access to the area where their equipment was stored over night or over the weekend.

The audit team contacted the two local Aboriginal communities – Fort William First Nation (FWFN) and Red Rock Indian Band (RRIB) – by letter and telephone in early April to inform them that the audit was taking place and to invite them to participate. A member of RRIB attended the LCC meeting (the individual is an LCC member) held in conjunction with the pre-audit meeting on April 28, 2009, where the lead auditor reviewed the audit process, described opportunities for participation, and invited participation by as many members as were interested.

During the audit, a member of the audit team met with the RRIB LCC members and the RRIB Woodlands Manager (also the LCC alternate). They generally expressed concern over the lack of communications with both Greenmantle and MNR, and pointed out the difference in their level of satisfaction with their participation in the Nipigon West LCC (fairly good) versus their involvement in the Lakehead Area LCC (less rewarding). A member of the audit team also met with the Band/Office Manager of the FWFN, who was interested in potential opportunities on the Lakehead Forest.

A member of the audit team also spoke or met with seven members of the Lakehead Area LCC, including two who were former members of the Lake Nipigon West LCC and including both co-chairs. Members were well-informed and provided numerous insights and suggestions, including suggesting that MNR should work with the LCC to raise the LCC profile to attract greater interest and participation, and that MNR should consider island biogeography when developing a management approach for the BBP.

The MNR provided a great deal of information to the audit team, including written documents and interviews. The Audit Team met with a range of MNR staff in the Thunder Bay District, as well as roughly a half-dozen staff from MNR Nipigon. There was considerable discussion regarding planning, which touched on aspects as wide ranging as inter-district working protocols and primary road development on the Black Bay Peninsula. In general, MNR staff provided thoughtful and detailed responses to our questions.

Company staff also provided a great deal of information regarding the range of issues covered in this audit report, including:

- the implications of the current shortfall in harvesting on GFI, the overlapping licensees, and the Forest;
- aspects of the 2007 FMP and the development of the FMP;
- their perspective on access and management of the BBP,
- their view of their relations with the two MNR Districts and other stakeholders; and
- various management, renewal and monitoring issues.

Appendix 5 – List of Acronyms

AOC	Area of Concern
AHA	Available Harvest Area
AR	Annual Report
AWS	Annual Work Schedule
BBP	Black Bay Peninsula
BMP	Best Management Practice
B.Sc.F	Bachelor of Science in Forestry
CFSA	Crown Forest Sustainability Act
Class EA	Class Environmental Assessment for Timber Management on Crown Lands in Ontario
DM	(MNR) District Manager
EMA	Enhanced Management Area
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FMU	Forest Management Unit
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FTG	Free-to-Grow
FU	Forest Unit
FWFN	Fort William First Nation
GFI	Greenmantle Forest Inc.
GIS	Geographic Information System
ha	hectares
km	kilometres
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
LA LCC	Lakehead Area LCC
LCC	Local Citizens Committee
LNW LCC	Lake Nipigon West LCC
m ³	cubic meters
MNR	Ontario Ministry of Natural Resources
MOA	Memorandum of Agreement
MROL	Ministry Recognized Operating Level
NDPEG	Natural Disturbance Pattern Emulation Guide
NSR	Not Satisfactorily Regenerated
OLL	Ontario's Living Legacy
PSW	Provincially Significant Wetland
PT	Planning Team
RD	(MNR) Regional Director
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
RRIB	Red Rock Indian Band
RSA	Resource Stewardship Agreement
SFL	Sustainable Forest Licence
SFMM	Strategic Forest Management Model
SGR	Silvicultural Ground Rule
SNLI	Superior North Loggers Inc

Appendix 6 – Audit Team Members and Qualifications

Auditor	Role	Responsibilities	Credentials
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Lead Auditor, Harvest and Wood Supply Auditor	overall audit coordination; oversee activities of other team members; liaise with Company & MNR; review and inspect harvesting records and practices; review aspects of forest management related to forest economics and social impacts reviews FMP modeling inputs and activities	B.Sc.F., Ph.D. (Forest Economics); 20 years consulting experience in Ontario related to forest management, planning, wood supply modeling, and forest economics; participated in 19 previous IFA assignments; certified as an auditor by the Quality Management Institute.
Mr. Chris Wedeles ArborVitae Environmental Services Ltd.	Wildlife and Roads Auditor	review and inspect Areas of Concern Documentation and Practices; review and inspect aspects of forest management related to environmental practices and wildlife management integration; review and inspect access and water crossings	B.Sc., M.Sc. (Wildlife Biology); 21 years wildlife and forest ecology experience in Ontario; completed almost 31 previous independent forest audits; certified as an auditor by the Quality Management Institute.
Mr. Robert Arnup	Silvicultural Auditor	review and inspect silvicultural practices and related documentation; review and inspects selected environmental aspects of forest management	M.Sc. Senior forest ecologist with 25 years' experience in silviculture, ecosystem-based forest management applications and environmental consulting in boreal Canada and elsewhere
Mr. Mark Leschishin, RPF Borealis Forestry Consulting	Harvesting and Modeling Forester Auditor	review FMP and related documents to ensure compliance with FMPM and other regulations; review plan development process for conformity with FMPM	Forest Technician Diploma & B.Sc.F. Over 30 years of experience, with specific expertise in the areas of management planning, silviculture, forest operations, GIS, and auditing. Mark is an approved Lead Forest Assessor for Smartwood Certification and has participated in sixteen IFA and other forest management audits in Ontario
Mr. Marcelo Levy, Responsible Forestry Solutions	Consultation Auditor	Review documentation related to forest management consultation Interview stakeholders, LCC, and First Nations regarding forest management issues	B.Sc. (forest engineer) and M.Sc. in Environmental Studies. Directed the FSC Canada Standards Program until 2005, when he formed the current Company.

Appendix 7 - Trend Analysis

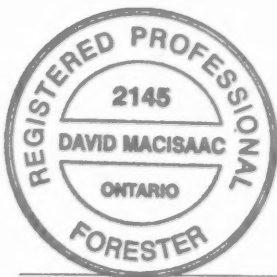
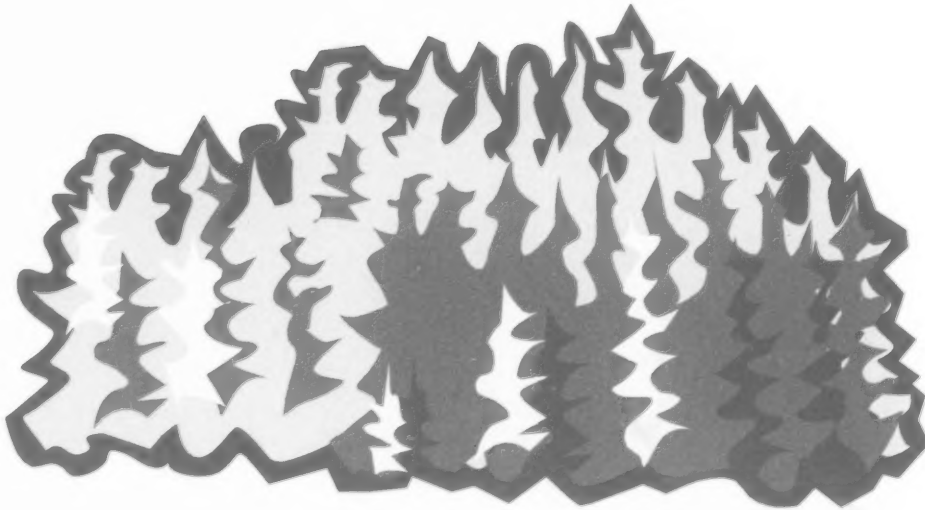
The Comparison and Trend Analysis Report contained in this Appendix was produced by Greenmantle Forest Inc. Although the Report was reviewed by the Audit Team, the Audit Team had no role in writing it.




**LAKEHEAD FOREST MU 796
GREENMANTLE FOREST INC.**

**INDEPENDENT FOREST AUDIT
April 1, 2004 to March 31, 2009**

**COMPARISON & TREND ANALYSIS OF
PLANNED VERSUS ACTUAL FOREST OPERATIONS
REPORT**




Dave MacIsaac - Area Forester
Greenmantle Forest Inc.

April 28th, 2009

Date

**Lakehead Forest
2009 Independent Forest Audit**

Comparison & Trend Analysis of Planned Versus Actual Forest Operations

INTRODUCTION

This comparison and trend analysis report has been prepared in accordance with the requirements of Appendix C of the *Independent Forest Audit Process and Protocol* (OMNR, February 2008, updated January 2009).

The period of this Independent Forest Audit (IFA) is April 1st, 2004 to March 31st, 2009 (five fiscal years). The purpose of this report is to evaluate various primary management components on the Lakehead Forest, to compare planned versus actual levels of forest operations, and to discuss trends as they pertain to the management of the Forest.

Creation of the Lakehead Forest and Management History

In 1997, the Lakehead Forest was created with the amalgamation of two former Crown Management Units (CMUs) – Port Arthur and Thunder Bay (both in Thunder Bay District). The approved 1997-2017 Forest Management Plan FMP was prepared by the Ministry of Natural Resources (MNR) to coincide with this amalgamation. This plan was prepared as per the Timber Management Planning Manual on Crown Lands in Ontario (1985), and as per the Phase-in requirements for the Forest Management Planning Manual (1996).

In the spring of 1998, the adjacent “main block” of the Nipigon CMU (Nipigon District) was amalgamated with Lakehead Forest via a Major FMP amendment. MNR prepared this amendment in a format similar to the FMP approved in 1997. This major amendment included the planned forest operations between 1998 and 2002 on the Nipigon District portion of the Forest.

In June 1998, the amalgamated CMUs, forming the current Lakehead Forest were transferred from Crown (MNR) management responsibility to private forest industry management responsibility as the Lakehead Forest Sustainable Forest Licence (SFL). Greenmantle Forest Inc. (GFI), the new company responsible for the management of the Lakehead Forest SFL, was formed through the partnership between Buchanan Forest Products Ltd. and Superior North Loggers Inc. (SNLI). At the time, SNLI represented 48 existing overlapping licensees operating on the three former CMUs. The number of overlapping licensees has since declined to 34. All harvest operations on the Lakehead Forest have been conducted under the authority of Overlapping Forest Resource Licences. GFI is responsible for all forest management activities on the Forest during the period of this IFA and prepared the 2002-2022 FMP (2002-2007 operating period) and the 2007-2017 FMP (2007-2012 operating period).

Changes to the landbase prior to 1999 are detailed in the MNR-prepared *Comparison and Trend Analysis of Planned vs Actual Forest Operations Report for the period April 1, 1994 to March 31, 1999*.

July 1999 Windstorm

A major windstorm event southwest of the City of Thunder Bay occurred in July 1999. High winds resulted in an estimated 10,553 hectares of blowdown on the SFL-managed portion of the Lakehead Forest. (This area does not include other land ownerships such as parks / protected

areas and private land.) This event resulted in a complete shift in focus for forest operations on the Lakehead Forest, relative to the original approved 1997-2017 FMP. A Minor FMP amendment was prepared and approved (August 1999) to permit salvage operations to occur, commencing in September 1999. Renewal activities of salvaged areas commenced the following fiscal year. Understandably, the shift in focus from planned 'normal' harvest and renewal activities to salvage operations associated with the blowdown event reduced GFI's capacity to complete normal activities.

Immediately following the windstorm, GFI and MNR made several reconnaissance flights over the affected areas to determine the geographic extent and damage intensity of the blowdown. Blowdown ranged from minor, partial damage of individual and groups of trees, to entire forest stands being completely depleted. Unfortunately, due to cloud cover conditions, aerial photography of the damaged areas could not be obtained until early fall of 1999. Hence, in order to prepare the Minor FMP amendment for August 1999, GFI prepared maps based on aerial and ground reconnaissance. These maps identified gross area salvage blocks that broadly encompassed, not only damaged forest stands, but also residual undamaged and potentially damaged forest stands. This method of salvage block planning allowed for flexibility in licencing and in tertiary road construction between damaged areas. The approved amendment permitted only damaged timber to be salvaged, with full consideration for areas of concern and the non-salvage of undamaged and minimally-damaged forest stands. Due to the large area and volume associated with the gross salvage areas, it was understood that significant salvage harvest area would remain at the end of the 1997-2002 plan term.

Additional successive administrative FMP amendments were required to permit salvage of blowdown in new areas identified via photography and ground observations. While initial estimates in 1999 indicated that the blowdown affected a gross area of approximately 25,000 hectares, the estimate increased to approximately 37,000 hectares by January 2001. The increase in estimated gross area was due to further wind-related events since 1999 and the availability of additional aerial photography, which aided in the delineation of affected areas. In addition, some forest stands that appeared undamaged on aerial photography were actually severely damaged when observed from the ground (trees were uprooted but only moderately leaning into one another). While it was relatively easy to identify (via photo interpretation) completely damaged stands, it was considerably more difficult to identify partially damaged stands.

Planning for the continuation of salvage harvest operations occurred for the 2002-2022 FMP, with salvage blocks being planned in a fashion similar to that for the August 1999 minor amendment (large gross block areas, with only damaged timber being salvaged). Again, the focus on salvage harvest operations reduced GFI's capacity to complete normal activities during the initial years of the 2002-2007 plan term.

Information For This Report

The following Tables (and associated graphic illustrations) are appended to the text of this report:

Table 1: Summary of Total Area Under Management

Table 2: Description of Forest Units

Table 3a: Summary of Planned & Actual Harvest Volumes – Normal Harvest

Table 3b: Summary of Planned & Actual Harvest Volumes – Salvage Harvest

Table 4: Summary of Planned & Actual Depletion Area

Table 5: Summary of Managed Productive Forest by Forest Unit

Table 6: Summary Report of Renewal, Tending and Protection Operations

Table 7: Harvested Area Successfully Regenerated – Summary of All Forest Units

All information presented in this report related to "Planned" operations incorporates all applicable amendments made to the 1997-2017 and 2002-2022 FMPs. While FMP tables for the 1997-2017 FMP were not updated, changes associated with amendments regarding harvest area and volumes were updated for annual report preparation and for the *1997-2002 Report of Past Forest Operations* (RPFO). Hence, source information for this report often refers to this RPFO, as opposed to the tables in the 1997-2017 FMP. Amendments made to the 2002-2022 FMP, as they relate to changes in harvest area / volume and silvicultural activities are reflected in updated tables in the FMP. 2007-2017 "Planned" figures do not incorporate all amendments made to the 2007-2017 FMP (to-date). Relatively minor changes to planned harvest area and volume have occurred as a result of a wildfire during the summer of 2007 in the Northern Light Lake area.

With respect to the 2007-2012 term "Actual" harvest area and volume figures, only the 2007-2008 figures are included. With respect to the 2007-2012 term "Actual" renewal and tending figures, while the 2008-2009 Annual Report will not be submitted until November 2009, interim 2008-2009 renewal and tending figures (from GFI's renewal records) have been included in the report (in addition to the 2007-2008 figures).

Where applicable, the projected / planned / actual information has been presented as an "annualized" figure. The number of years over which data has been annualized is described in the discussion for each applicable table prepared in this report. Tables 3a & 3b, 4 & 6 present data in an annualized format.

The 2006-2007 Annual Report (representing the final year of the 2002-2007 term), 1997-2002 Report of Past Forest Operations (RPFO), the MNR-prepared *Comparison and Trend Analysis of Planned vs Actual Forest Operations Report for the period April 1, 1994 to March 31, 1999*, the GFI-prepared *Comparison and Trend Analysis of Planned vs Actual Forest Operations Report for the period April 1, 1999 to March 31, 2004*, as well as current and previous FMPs should be reviewed for more information on forest management operations, problems and issues for the Lakehead Forest.

Minor discrepancies between various referenced Forest Management Plan or Annual Report Tables and the attached Trend Analysis Tables are due to rounding.

SUMMARY OF TOTAL AREA UNDER MANAGEMENT

Table 1 presents a summary of total area under management for the 1997-2002, 2002-2007 and 2007-2012 plan terms. It is important to note that while the 2004 IFA Trend Analysis Table 1 included water area within "Other Land", water has been excluded in the accompanying Table 1.

During the plan terms included in Table 1, there were several landbase changes to the SFL area, resulting primarily from:

- ❖ The creation of six conservation reserves and three provincial parks or provincial park additions through Ontario's Living Legacy process.
- ❖ Addition of Provincially-owned patent lands (approximately 32,500 hectares) to the managed forest landbase between the 1997-2002 and 2002-2007 terms. This was a result of the June 2001 amendment to the definition of Crown Land in the Crown Forest Sustainability Act.

The net result of these changes was an increase in the Total Production Forest area from 306,736 hectares to 324,508 hectares between the 1997 and 2002 plan periods.

As illustrated graphically in the figure associated with Table 1, area changes worthy of highlighting include:

- ❖ The significant reduction of Productive-Protection Forest between the 1997-2002 and 2002-2007 terms, which was the result of new FRI information for the Nipigon District portion of the landbase.
- ❖ A reduction in area classified as barren & scattered (B&S) or not-sufficiently restocked (NSR) between 1997-2002 and 2002-2007, resulting from a joint free-to-grow assessment program conducted by the MNR and GFI.
- ❖ The subsequent increase in area classified as barren & scattered (B&S) or not-sufficiently restocked (NSR) between 2002-2007 and 2007-2012, due primarily to updating of the 2007 FMP planning inventory, which took into consideration re-classification of area affected by large natural disturbances (un-salvaged areas associated with the 1999 blowdown event and 2002 wildfires on the Black Bay Peninsula)
- ❖ The increases in area depleted, primarily as a result of the 1999 blowdown event and associated salvage efforts.
- ❖ The increase in spruce and white birch working group area between the 1997-2002 and 2002-2007 terms, resulting from updated FRI information.
- ❖ The decline in area of balsam fir and poplar working groups throughout planning terms is due to conversion to other working groups.

General Trends and Observations

- ❖ Changes to the administrative boundaries of the Forest, the creation of new parks and protected areas, and the addition of Crown-owned private lands had a significant impact on the overall managed landbase (primarily occurring between 1997 and 2002). Relatively minor changes since 2002 have included small changes to Parks and Protected Area boundaries as well as small spatial changes to ownership boundaries, including private lands. Significant changes to the landbase are not expected to occur in the next few planning terms (GFI recognizes that Cooperative SFLs and / or changes to the Provincial tenure system may occur in the future). Stability in the forest landbase will permit improved comparisons and trend analyses in the future.
- ❖ Updating and maintenance of the Forest Resource Inventory with depletion and survey information is a continual process that is required to ensure maximum available landbase for forest management purposes.

DESCRIPTION OF FOREST UNITS

Table 2 presents a description of the forest units used in the 1997-2002, 2002-2007 and 2007-2012 terms.

A total of nine forest units were defined in the 1997-2002 FMP. FRI working group species was used as the primary descriptor of forest unit (eg. jack pine working group = jack pine forest unit), with the exception of the combination of black and white spruce working groups into a Spruce forest unit, the combination of cedar and larch working groups into the Other Conifer forest unit and the ash working group described as an Other Hardwood forest unit. It was recognized by the MNR and GFI that classification by working group species is not the optimum means of defining forest units on the Lakehead Forest. As the forest is comprised of a large proportion of mixedwood forest types, associated volumes are not easily estimated in this manner (significant conifer volume associated with hardwood forest units/working groups; or vice-versa).

With the availability of the Geographic Information System (GIS) for the preparation of the 2002-2022 FMP, more efficient manipulation of digital FRI information was possible, resulting in more complex analyses of criteria to derive forest units (compare the forest unit FRI parameters & criteria for the 1997-2002 and 2002-2007 plan terms in Table 2). As a result, the number of forest units derived for the 2002-2007 FMP was increased to fourteen. The forest units are based on FRI species composition and grouped into three main forest types – *generally* pure conifer, *generally* pure hardwood and mixedwood. The refinement of three mixedwood forest units (Conifer-dominated Mixedwood, Hardwood-dominated Mixedwood and Mixedwood) facilitates better volume estimations and sustainable management of these forest types. In addition, the 2002-2007 FMP also included a forest unit called Degraded. This was a site-specific forest unit, based on field information, that characterized stands that had abnormally low volume, off-site working group species, displayed evidence of historical high-grading practices (prior to the 1980s), or were heavily damaged by spruce budworm.

With the exception of dropping one forest unit (Degraded), the 2007-2017 FMP uses the same forest unit classification as the 2002-2022 FMP. The Degraded forest unit was not included as specific MNR criteria were developed to address salvage harvest operations in Low Volume and/or Low Quality stands managed under the clearcut system (Forest Accord Item #11: Opportunity #1 – per the *Report of the Forest Accord Item #11 Committee to the Ontario Forest Accord advisory Board* (2000)). In the 2007-2017 FMP, stands previously identified as Degraded are managed in accordance with the MNR criteria for managing low volume/low quality stands.

General Trends and Observations

- ❖ In general, relative to those used in the 1997-2002 FMP, the forest units used in the 2002-2007 and 2007-2012 plan terms more accurately portray forest stand conditions and, most importantly, facilitate the management of mixedwood forest types.
- ❖ Recent forest unit designations will aid in the analysis of forest unit change over time and determination of objective achievement of the future forest condition.

SUMMARY OF PLANNED & ACTUAL HARVEST VOLUMES

Normal Harvest Volume Utilization

Table 3a and the associated graph present the summary of planned and actual volumes for normal harvest areas. The volume presented is the "utilized" volume. All planned and actual harvest volumes are annualized over five years (volume divided by five) except for the actual volumes for the 2007-2012 term. For the 2007-2012 term, only volume delivered in 2007-2008 and reported in the 2007-2008 Annual Report are available.

Only 52% of the planned annualized 1997-2002 FMP volume was actually harvested. This was directly related to the shift from normal harvest to blowdown salvage harvest operations (as discussed previously). In addition, the least marketable species during this plan period (white pine, white birch, cedar, larch and ash) had the lowest harvest and utilization levels. The more readily marketable species (spruce, jack pine, balsam fir and poplar) had a greater proportion of their planned volume harvested and utilized.

During the 2002-2007 term, even with continued blowdown salvage operations, 77% of the planned annualized volume was actually harvested. (79% and 75% of planned conifer and hardwood species volume, respectively). Utilization was aided by a high demand for poplar by a local sawmill and pulp and paper mill. However, demand for poplar decreased considerably in 2006-2007 and remains relatively low. In general, volume harvested slowly declined throughout the term, reaching a low (below 200,000m³) in 2006-2007.

In the first year of the 2007-2012 term (2007-2008), 71% of the planned annualized volume was actually harvested. While hardwood markets remained poor, Buchanan Forest Products Ltd., an overlapping licensee on the Lakehead Forest, harvested a large area in 2007-2008 and contributed significantly to delivered volumes.

Salvage Harvest Volume Utilization

Table 3b presents the summary of planned and actual volumes for salvage harvest areas. The volume presented is the "utilized" volume. For the 1997-2002 period, planned and actual salvage harvest volume has been annualized over a three-year period (volume divided by three), as the blowdown event occurred in 1999-2000 and only three years of salvage operations were conducted. 2002-2007 planned and actual salvage volume figures are annualized over five years. No salvage harvest was planned for the 2007-2012 term.

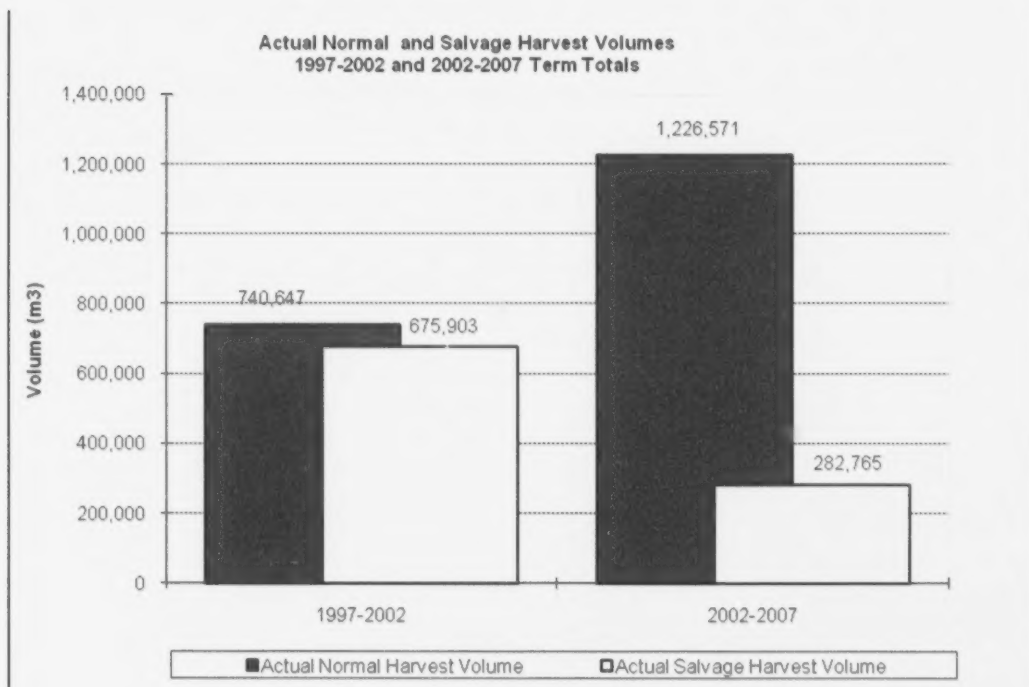
During the 1997-2002 term, 41% of the planned annualized volume was actually salvaged. As already discussed, planned gross salvage areas (and associated volume) were far greater in size than could be reasonably harvested between 1999-2000 and 2001-2002. As with normal harvest volume utilization during this same plan, the least marketable species (white pine, white birch, cedar, larch and ash) had the lowest harvest and utilization levels. In addition, the quality of product from salvaged damaged timber, particularly for sawlogs, had a significant impact on utilization. The more readily marketable species, being spruce, jack pine, balsam fir and poplar, had a greater proportion of their planned volume harvested and utilized.

A portion of the planned, un-salvaged area from the 1997-2002 FMP was carried forward into the 2002-2007 FMP. During the 2002-2007 term, 43% of the planned annualized volume was actually salvaged. Salvage harvest operations were reduced dramatically in 2004-2005 as fiber quality and marketability declined.

While no salvage harvest area was planned in the 2007-2012 period, a small 8.0 hectare blowdown patch was harvested within a normal harvest block, and reported as salvage harvest area in the 2007-2008 AR. Refer to the 2007-2008 AR for additional information. Annualized actual harvest volumes for the 2007-2012 term are actual reported volumes from the 2007-2008 Annual Report.

General Trends and Observations

- ❖ Volume utilization, particularly for poplar, from both normal harvest and salvage harvest areas, improved between the 1997-2002 and the 2002-2007 terms. However, due to local mill closures and reduced demand from pulp and paper producers, poplar utilization again became a concern in the final years of the 2002-2007 term. At present, poplar utilization continues to be an issue. White birch utilization has been acceptable due to a relatively strong personal fuelwood market, willing operators and close proximity to Thunder Bay.
- ❖ The table below illustrates the degree to which salvage harvest affected normal harvest volume deliveries over the 1997-2002 and 2002-2007 terms. Again, it is important to note that the 1997-2002 salvage volume of 675,903 m³ was achieved in only the final three years of the term. As salvage operations declined in the 2002-2007 term, normal harvest operations gained momentum.



- ❖ GFI expects to see a significant decrease in delivered volumes in 2008-2009. Further, unless markets improve dramatically, it will be extremely difficult to realize average annual planned harvest volume figures for the remainder of the 2007-2012 term.

SUMMARY OF PLANNED AND ACTUAL DEPLETION AREA

Table 4 and the associated graph present the summary of planned and actual depletion area, including natural depletions. Planned and actual depletion area are presented by plan term and by forest unit. The table has been arranged to accommodate the change in forest unit classification between the 1997-2002 and 2002-2007 terms. For the 1997-2002 and 2002-2007 terms, all planned and actual area figures are annualized over five-years (area divided by five), except for 1997-2002 planned and actual salvage, which is annualized over a three-year period (1999-2000 to 2001-2002). Regarding the 2007-2012 term, planned values are annualized over five years, while actual values are those reported in the 2007-2008 Annual Report.

Normal Harvest Area

For the 1997-2002 term, the actual normal annualized depletion area (1,202 ha) was 58% of that planned (2,075 ha). Failure to harvest a large percent of the planned area was directly related to the shift from normal harvest to blowdown salvage harvest operations. The 2,111 hectares (annualized) of natural depletion is, primarily, from the 1999 blowdown event.

For the 2002-2007 term, the actual normal annualized depletion area (2,006 ha) was 50% of that planned (3,990 ha). Again, this is primarily due to a continued focus on blowdown salvage harvest operations in the initial years of the term. However, normal harvest operations were also affected by mill closures and general poor market conditions in the final years of the term. As the Lakehead Forest is comprised of a large proportion of mixedwood forest types, when poplar utilization by local facilities decreased, GFI's ability to harvest both hardwood and softwood species also decreased. The 396 hectares (annualized) of natural depletion is associated (primarily) with a 2002 wildfire on the southern end of the Black Bay Peninsula and a 2006 isolated blowdown event on the mainland. Due to the remote location, the wildfire depleted area was not salvage harvested. It was, however, seeded, tree planted and tended via funding from the Forest Renewal Trust Fund. A small eight hectare patch of the 2006 blowdown area was harvested in 2007-2008 (discussed further below).

In the first year of the 2007-2012 term (2007-2008), 60% of the planned annualized area was actually harvested. As with the discussion regarding harvested volume, while hardwood markets remained poor in 2007-2008, Buchanan Forest Products Ltd., an overlapping licensee on the Lakehead Forest, harvested a large area in 2007-2008, thus contributing significantly to the area harvested.

Salvage Harvest Area

For the 1997-2002 term, the actual salvage annualized depletion area (1,769 ha) was 14% of that planned (12,358 ha). While greater than the normal area harvested, the percent of planned area actually harvested is low due to the large gross areas planned.

For the 2002-2007 term, the actual salvage annualized depletion area (513 ha) was 17% of that planned (3,060 ha). Again, the low percent of planned area actually harvested is due to the large gross planned areas, many of which were simply carried forward into the 2002-2007 term from the 1997-2002 term.

While no salvage harvest area was planned in the 2007-2012 term, a small eight hectare blowdown patch was harvested within a normal harvest block and reported as salvage harvest area in the 2007-2008 Annual Report. Refer to the 2007-2008 Annual Report for additional information.

Normal and Salvage Area Combined

A meaningful comparison of total annualized actual harvest area (salvage and normal combined) relative to planned harvest area is made difficult due to the large gross salvage areas forecast in the 1997 and 2002 FMPs. However, when normal and salvage actual harvest areas are combined for the 1997-2002 and 2002-2007 terms and compared to only the normal planned areas for the 1997-2002 and 2002-2007 terms (combined), we are provided an indication of GFI's ability to harvest the normal planned area (in a sense, assuming all actual harvested area is normal). Associated area data is provided in the following table.

1997-2002 AND 2002-2007 Terms Combined

Planned Normal Harvest Area	6,065 hectares
Combined Actual Normal AND Salvage Harvest Area	5,489 hectares
Percent of Normal Planned Actually Salvage or Normal Harvested	91%

While many factors influence the ability to complete harvest operations, from the table above, it is evident 91% of the planned normal area may have been 'achievable' had the focus not shifted toward salvage operations between 1999 and 2004.

General Trends and Observations

- ❖ As one would expect, the graph included with Table 4 shows a trend of actual harvest similar to that illustrated by the graph included in the above section *Summary of Planned & Actual Harvest Volumes* (focus returning to normal operations between the 1997-2002 and 2002-2007 terms).
- ❖ Due to the high demand for conifer wood fiber, the percent of planned area actually harvested is greater in conifer-dominated forest units.
- ❖ As discussed in the section *Summary of Planned & Actual Harvest Volumes*, while the market for poplar fiber improved between the 1997-2002 and the 2002-2007 terms, it has since declined due to local mill closures and reduced demand from pulp and paper producers. If the personal fuelwood market remains strong, GFI can continue to harvest white birch dominated areas and access the conifer volume associated with these areas.
- ❖ In light of the unpredictable markets (especially for poplar), the large area of hardwood-dominated and mixedwood forest types on the Lakehead Forest create a challenge for both planners and operators. As a result, in 2006-2007, GFI began to manage such areas under a two-pass silviculture system. Since, operators have been successful in marketing the conifer from the first pass and returning to market the hardwood species. This system has allowed for greater utilization of planned volumes from the 2002-2007 term.

SUMMARY OF MANAGED PRODUCTIVE FOREST BY FOREST UNIT

Table 5 presents the summary of managed productive forest area by forest unit. For the 1997-2002 term, FRI working group species was used as the primary descriptor of forest unit (eg. jack pine working group = jack pine forest unit). (Refer to Table 2 and the previous discussion.) For this period, only the Total Protection Forest area information by forest unit and the Available Production Forest area information by age class and forest unit are available in the applicable source tables. The Total Protection Forest area and Total Available Production Forest area for this plan period was 20,752 hectares and 307,051 hectares, respectively.

For the 2002-2007 term, forest units were derived on the basis of species compositions and forest types (refer to Table 2). The information presented in Table 5 for this term is area and volume by age class, for each forest unit, for Protection Forest and Available Production Forest. The Total Protection Forest area and Total Available Production Forest area for this plan period is 8,206 hectares and 324,507 hectares, respectively.

For the 2007-2012 term, forest units were also derived on the basis of species compositions and forest types (refer to Table 2). The information presented in Table 5 for this term is area by age class, for each forest unit, for Protection Forest and Available Production Forest (source tables do not provide applicable volume figures). The Total Protection Forest area and Total Available Production Forest area for this plan period is 8,067 hectares and 323,747 hectares, respectively.

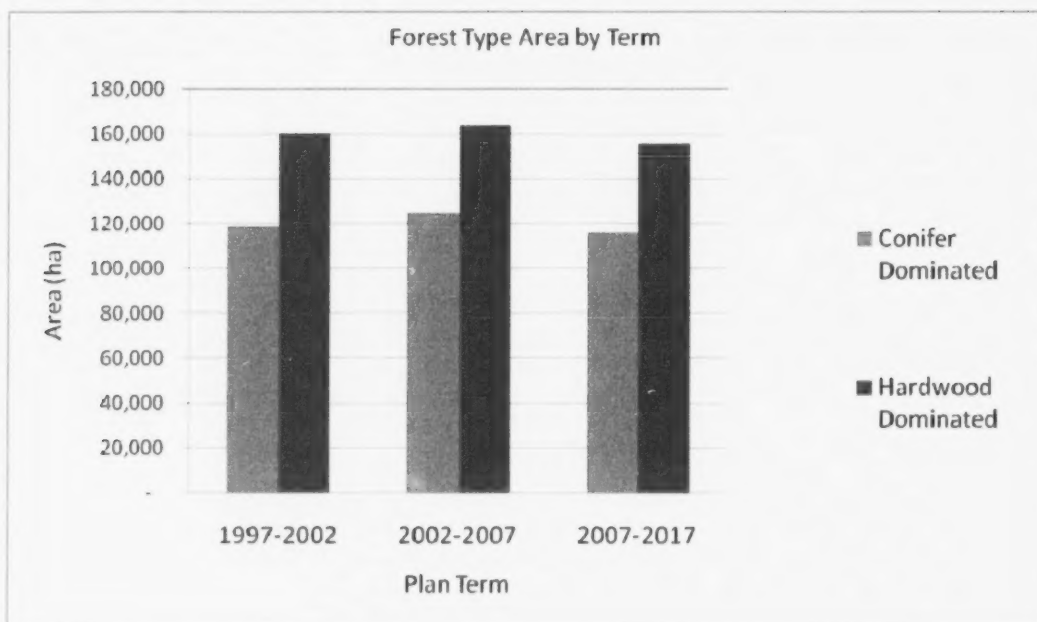
General Trends and Observations

It is difficult to evaluate changes in forest unit area by age class between the 1997-2002 and subsequent terms, related to / resulting from forest management activities on the Forest. This is a result of significant forest unit area changes and area by age class changes between plan terms, which include but are not limited to:

- ❖ Landbase withdrawals from the SFL due to Ontario's Living Legacy;
- ❖ Inclusion of Crown Patent lands into the SFL-managed landbase;
- ❖ New forest photo-interpretation and Forest Resource Inventory production for the Nipigon District portion of the Forest in 1998 (used for the 2002-2022 FMP); and,
- ❖ Significant natural depletion area (blowdown and fire).

The dramatic decrease in Protection Forest area between periods is seen to be primarily attributed to the new FRI produced for the Nipigon District portion of the Forest in 1998. The old FRI for this area was produced in 1962, and it is surmised that this FRI was only aged for FMP preparation purposes, but tree height and site class stand characteristics were not updated. Therefore, over time, site class value decreases resulting in the false increase in total site class 4 area (Protection Forest).

In light of forest unit definition changes and in order to provide a relatively simple comparison of productive forest by forest type over time, the figure below borrows information from Table 1 (as forest units have been equated using planning inventory data). The conifer-dominated forest type includes the white pine, red pine, jack pine, scotch pine, spruce, balsam fir, cedar and larch working groups, while the hardwood-dominated forest type includes the poplar, white birch, maple and ash working groups.



The proportion of conifer-dominated to hardwood-dominated forest types remains relatively constant over time. As previously discussed, between 1997-2002 and 2002-2007, there was an increase in total available production forest as well as a reduction in area classified as barren & scattered (B&S) or NSR, which is evident in the increase in both conifer-dominated and hardwood-dominated forest types in 2002-2007. The reduction in both forest types between 2002-2007 and 2007-2012 is due, in part, to the effects of two large natural disturbances (1999 blowdown event and a large wildfire on the Black Bay Peninsula (NIP 16)).

Objective 4.3 in the 2002-2022 is the conversion of balsam fir stands (BfDom forest unit) to other forest units, which better reflect a natural forest composition and age class structure. 2002-2022 FMP Table FMP-12, "*Projected Target Achievement For The Selected Management Alternative*" (management alternative #4) suggests a reduction of 3,118 hectares between 2002 and 2022. IFA Table-5 indicates that between the start of the 2002-2007 and 2007-2012 terms the BfDom forest unit area was reduced in area by 1,191 hectares. Conversion of BfDom forest unit to other forest units is partially responsible for the reduction of the BfDom forest unit over time.

SUMMARY OF RENEWAL, TENDING AND PROTECTION OPERATIONS

Table 6 presents the summary of renewal, tending and protection operations (annualized) for the 1997-2002, 2002-2007 and 2007-2012 plan terms, for normal harvest, natural depletion (including salvage) and total area. No protection operations occurred during any term.

For the 1997-2002 term, the planned / projected and actual silvicultural treatment areas for normal harvest have been annualized over five years, while those for natural depletion (including salvage harvest) are annualized based on the two years in which treatments occurred, following the commencement of blowdown salvage operations.

For the 2002-2007 term, planned and actual normal and salvage area treatment figures have been annualized over five years.

For the 2007-2012 term, planned areas are annualized over a five-year period, while actual areas are available for two years (2007-2008 and 2008-2009) and, thus, annualized over a two-year period.

1997-2002 Normal Harvest Area Renewal & Tending

It is important to first note that achievement of planned renewal activities relies heavily on completion of planned harvest activities (while acknowledging the influence of harvest from the previous term). As discussed in the section *Summary of Planned and Actual Depletion Area*, due to the focus on salvage harvest areas, only 58% of the planned normal area was actually harvested in the 1997-2002 term.

During the 1997-2002 term, only 24% of the planned natural regeneration occurred. The Poplar future forest unit comprised 96% of the natural regeneration. No scarification for natural regeneration of planned area to Jack Pine and Spruce future forest units occurred, as this is generally not a suitable treatment on the Lakehead Forest (because of the high quantity of post-harvest competitive vegetation). There was 47% more normal harvest area tree planted than planned. The future forest units of normal harvest areas tree planted, by percentage, were Spruce at 46%; Jack Pine at 29%; Red Pine at 23%; and White Pine at 2%. There was 20% more normal harvest area mechanically site prepared than planned in the FMP. The majority of the site prepared normal harvest area was for tree planting to the Spruce future forest unit.

There was 202% more tending (cleaning) with herbicide for plantation release, than planned in the FMP. Ground application of herbicide was significantly higher than planned as it is a favourable treatment for areas that are small / irregularly-shaped or proximate to values / areas of concern; for areas planted to white pine or white spruce; for areas that have substantial residual overstory; or for areas which do not necessarily require a 100% broadcast herbicide application. The substantial increase in plantation tending with herbicide was needed to ensure survival and establishment of conifer plantations on the Forest. The majority (61%) of tending with herbicide in normal harvest areas occurred in Spruce future forest unit plantations.

1997-2002 Natural Depletion (Including Salvage) Area Renewal

For all renewal activities, actual natural depletion / salvage area treated was substantially less than planned targets in the FMP. This is due to the fact that a very aggressive renewal program was forecasted, which was, in hindsight, beyond the rate at which blowdown salvage and renewal operations could possibly occur during the period.

During the 1997-2002 term, only 9% of the planned natural regeneration of salvage harvest areas occurred. The Poplar future forest unit comprised 96% of the natural regeneration. Only 27% of the planned tree planting area was planted in salvage harvest areas. The future forest units of areas tree planted, by percentage, were Jack Pine at 39%; Red Pine at 36%; and Spruce at 25%. No direct seeding occurred as planned. Only 29% of the planned area was mechanically site prepared. The majority of the site-prepared area was for tree planting to the Jack Pine future forest unit.

Total 1997-2002 Renewal & Tending

For the 1997-2002 term, on an annual basis, only 14% of planned area was regenerated naturally; 61% of planned area was tree planted; 47% of planned area was mechanically site prepared; and 202% of planned area was tended. In general, failure to realize planned renewal areas was the

direct result of the shift in harvest operations from normal to salvage areas and a non-realistic planned renewal target for salvage areas (time frame too short).

2002-2007 Normal Harvest Area Renewal & Tending

Again, it is important to first note that achievement of planned renewal relies on completion of planned harvest activities. As discussed in the section *Summary of Planned and Actual Depletion Area*, due to the focus on salvage harvest areas, only 50% of the planned normal area was actually harvested during the 2002-2007 term.

During the 2002-2007 term, only 28% of the planned natural regeneration occurred, 51% of planned tree planting was conducted and 60% of planned mechanical site preparation was completed. It is common, following a post-harvest assessment that, where appropriate, mechanical site preparation may be abandoned in favour of straight-planting without site preparation. 156% of the planned chemical site preparation was actually conducted. The planned area was surpassed due to an oversight when amending the 2002-2022 FMP. While the value is much greater than 100%, the total (non-annualized) additional area is relatively small (approximately 6 hectares). Similarly, 130% of the planned manual tending was actually completed. Manual tending exceeded the forecasted area due to the need to treat area initially scheduled for ground chemical tending. Manual ground tending was required in an area overtopped with competition too tall for backpack chemical application. Actual aerial and ground chemical tending also surpassed annualized planned levels (112% and 104%, respectively). This was due to a very large tending program in 2006-2007 (more than half of the total aerial tending conducted in the term in normal harvest areas was completed in 2006-2007).

2002-2007 Natural Depletion (Including Salvage) Area Renewal

Unlike the 1997-2002 term, planned renewal activities in 2002-2007 were much more realistic in scope and actual levels of achievement were significantly greater. Still, a few treatments fell well short of planned annualized levels due to a large amount of planned salvage harvest area being abandoned (due to fiber quality), as well as changes in prescriptions.

Only 37% of the planned natural regeneration occurred, 84% of planned tree planting was conducted, 100% of the aerial seeding was conducted and 57% of planned mechanical site preparation was completed. Again, it is common, following a post-harvest assessment that, where appropriate, mechanical site preparation may be abandoned in favour of straight-planting without site preparation. Actual ground chemical tending slightly surpassed the annualized planned level (102%), while actual aerial chemical tending was 78% of the annualized planned level.

These figures help illustrate the substantial effort applied to salvage harvesting and renewing the 1999 blowdown area, as well as renewing the 2002 Black Bay Peninsula Wildfire (NIP 16). More (non-annualized area) site preparation, tree planting, seeding and tending occurred in naturally depleted areas than in normal harvest areas during the 2002-2007 term.

Total 2002-2007 Renewal & Tending

For the 2002-2007 term, only 30% of planned (annualized) area was naturally regenerated, 69% of planned tree planting was conducted, 100% of the aerial seeding was conducted and 59% of planned mechanical site preparation was completed. As mentioned, 156% of the planned chemical site preparation was actually conducted and 130% of the planned manual tending was actually completed. Actual ground chemical tending slightly surpassed the annualized planned

level (103%), while actual aerial chemical tending was 90% of the annualized planned level. In general, failure to realize planned renewal areas was the direct result of failure to harvest planned normal and salvage levels.

Please refer to the 2006-2007 Annual Report for additional details regarding 2002-2007 term renewal activities.

Total 2007-2012 Renewal & Tending

For the 2007-2012 term, only 2007-2008 (reported in the 2007-2008 Annual Report) and 2008-2009 (interim figures not yet reported) renewal figures are available. Renewal of natural disturbance area occurred in 2007-2008 (only aerial tending), but not in 2008-2009.

Approximately 41% of planned (annualized) area was naturally regenerated, 56% of planned tree planting was conducted and 38% of planned mechanical site preparation was completed. Actual ground chemical tending was 17% of the annualized planned level, while actual aerial chemical tending was 72% of the annualized planned level. As in previous plan terms, failure to realize planned renewal areas was the direct result of failure to harvest planned harvest levels.

General Trends and Observations

- ❖ In naturally depleted areas, only site preparation and natural regeneration were greater in 1997-2002, relative to 2002-2007. All other renewal activities were far greater in area in 2002-2007, relative to 1997-2002. The final significant renewal treatment, aerial chemical tending, conducted in blowdown salvage areas was completed in 2008-2009.
- ❖ Natural regeneration continues to be relied upon for hardwood species (predominantly aspen and white birch forest units), while the majority of conifer regeneration is via artificial means. Natural regeneration is generally not reported on until at least one growing season following harvest in order to facilitate more accurate mapping of actual depletion areas (aerial photography is acquired in the following fiscal year), and to verify silvicultural post-harvest treatment prescriptions.
- ❖ Direct planting (without mechanical site preparation) is being considered more frequently where appropriate. When sites with relatively thin duff layers, little competing vegetation and adequate exposed mineral soil are identified, planting is being scheduled sooner than normal in order to initiate regeneration quickly and take advantage of a decrease in total renewal cost.
- ❖ The Forestry Futures Trust (FFT) has assisted in funding renewal efforts in naturally depleted areas in all three terms. With the assistance of the FFT, artificial regeneration methods (tree planting or seeding) have been applied to approximately 59% of all renewal area during the 1997-2002, 2002-2007 and 2007-2012 (first two years) terms.
- ❖ Spruce, Jack Pine, Red Pine and ConMx continue to be the dominant conifer forest units artificially regenerated.
- ❖ Due to limitations and cost of intensive renewal treatments in certain forest types, more attention is being directed to managing for mixedwood future forest types (mixed conifer and spruce / poplar mixedwoods), as opposed to consistently striving for pure conifer plantation stands. As well, GFI has cooperated with the MNR's Thunder Bay District Area Biologist to enhance moose habitat by limiting chemical tending adjacent to high

quality moose cover. Stand level strategies such as this will, inevitably, increase the hardwood component of many future forest units.

- ❖ Harvest activities on the Black Bay Peninsula during the IFA period have been limited to road right-of-way clearing and relatively accessible areas. Once harvest activities commence in remote areas, renewal strategies will need to be developed, while considering the added cost of access.
- ❖ The use of herbicide is the most efficient means of plantation tending and, because of the dynamics of shrub and herbaceous competitive vegetation, the majority of areas planted require at least one herbicide treatment.

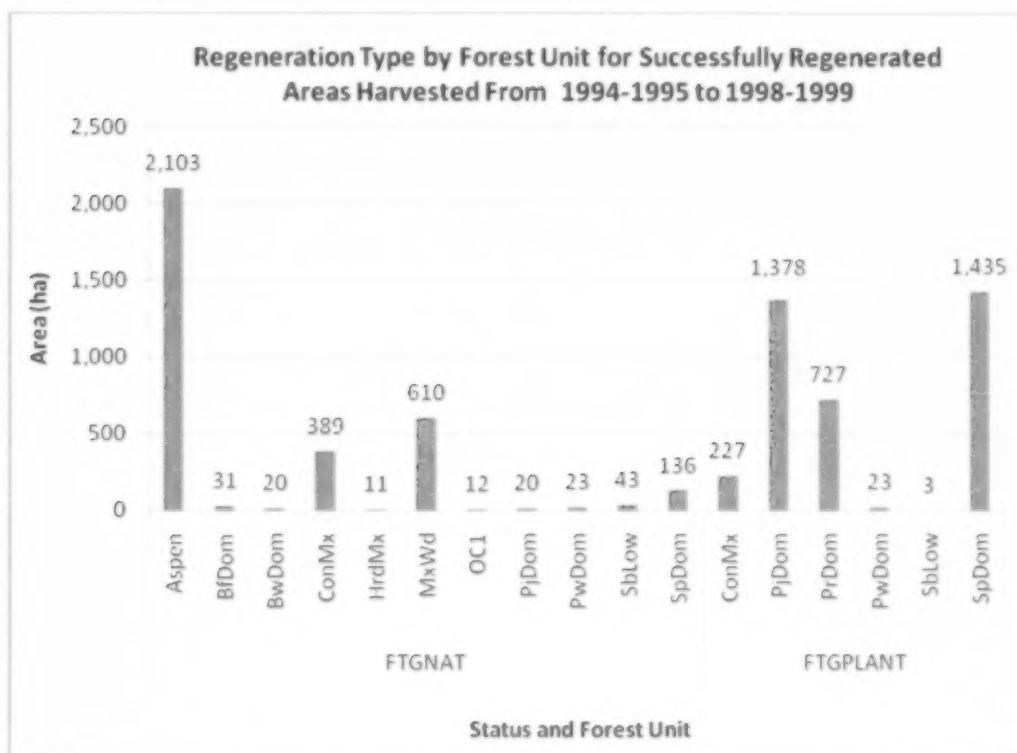
SUMMARY OF HARVESTED AREA SUCCESSFULLY REGENERATED

Table 7 and the accompanying graph present the status of regeneration for areas harvested during the five-year period (fiscal years 1994-1995 through 1998-1999), inclusive. The year of depletion is based on the "year of origin" (YRORG) calculated for the 2007-2017 FMP planning inventory and takes into consideration the regeneration lag associated with tree planted areas. For example: Planted areas of YRORG = 1996 to 2000 are considered depleted between 1994 and 1998 as a two-year regeneration lag is assumed. In all naturally regenerated areas, the year of depletion equals the year of origin. A significant amount of time was invested in updating the 2007 planning inventory with historical data and previous plan(s) depletion information. Regeneration or free-to-grow (FTG) status is based on surveys conducted by the MNR, prior to the formation of GFI, as well as those conducted by GFI since 1998. In order to complete the Trend Analysis table, results of FTG surveys conducted in the fall of 2008, not yet reported in the respective Annual Report, have been incorporated.

A total of 9,886 hectares were harvested between 1994-1995 and 1998-1999. Of the area harvested, 7,353 hectares have been surveyed for regeneration success (74%). Of the area surveyed, 7,190 hectares have been declared successfully regenerated (98%). Therefore, of the area harvested, 73% has been declared FTG. The 163 hectares of surveyed area, which has not been successfully regenerated, has been prioritized for future surveys. The 2,533 hectares of unsurveyed area (status unknown) will be monitored and surveyed for regeneration success at the appropriate time.

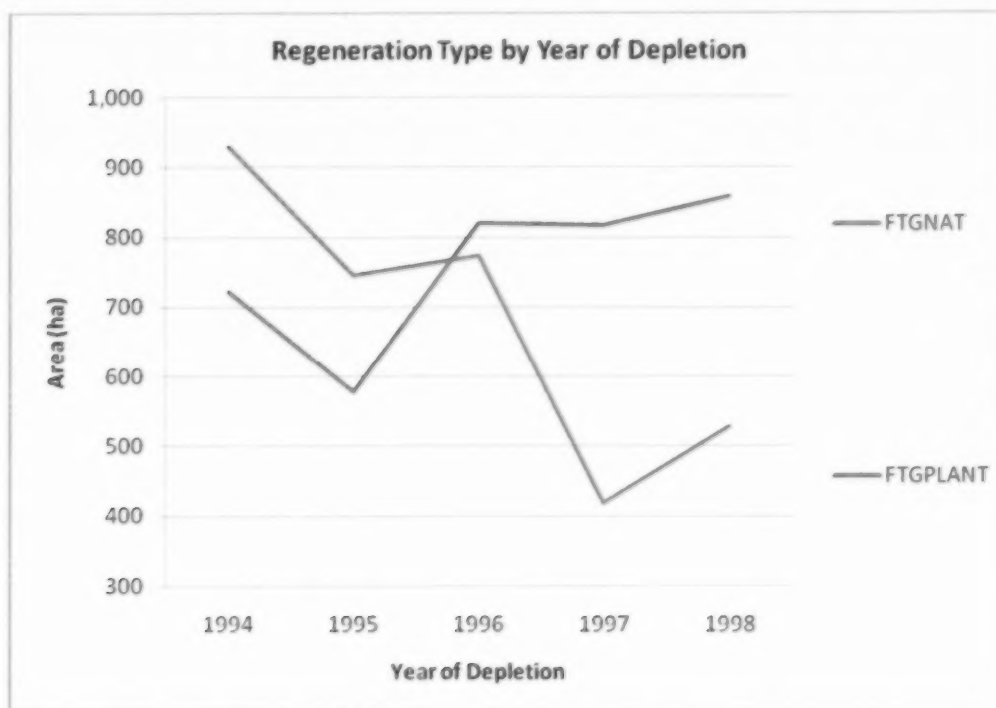
General Trends and Observations

- ❖ Of the 7,190 hectares declared successfully regenerated, 3,793 hectares (53%) resulted from tree planting, while the remaining 3,397 hectares (47%) regenerated naturally.
- ❖ The figure below presents regenerated forest unit by regeneration type (FTGNAT = FTG via natural regeneration methods, while FTGPLANT = FTG via tree planting).



As evident, Aspen is the predominant forest unit successfully regenerated by extensive, natural regeneration methods. In fact, the Aspen forest unit is, by far, the most abundant regenerated forest unit of the period. Other regenerated forest units of note, successfully regenerated by natural methods are ConMx and MxWd. As expected, intensive FTGPLANT areas are dominated by conifer-leading forest units.

- ❖ The figure below presents regeneration type (FTGNAT or FTGPLANT) by year of depletion.



The figure is presented to illustrate the change in regeneration methods over time. While natural methods were the predominant and successful means of regeneration for areas harvested in 1994 and 1995, artificial methods (tree planting) became the predominant and successful means of regenerating areas harvested from 1996 to 1998. This trend should continue with areas harvested after 1998.

- ❖ During the IFA period, FTG surveys were conducted in 2005-2006, 2006-2007 and 2008-2009. Intensive surveys were conducted in 2006-2007 by KBM Forestry Consultants Inc. using aerial photography captured in the summer of 2004, as well as ground based surveys. The primary objective of the 2006-2007 surveys was to assess the status of salvaged and un-salvaged 1999 blowdown areas as well as the 1995 wildfire near Northern Light Lake (other normal harvest areas were also assessed). Extensive surveys conducted in 2005-2006 and 2008-2009 were completed by GFI by helicopter.
- ❖ In general, the progress of all post-harvest silvicultural treatments (natural and artificial) is now monitored with more diligence, relative to historical regeneration monitoring programs. It is evident, based on the availability of post-harvest information, that past harvest areas artificially regenerated (that is, where dollars were invested) were deemed priority for progress monitoring over natural regeneration areas. As no formal silvicultural prescriptions are documented for the treatment of areas harvested prior to 1997, one can only assume that desired results were achieved. For example, one may surmise that if jack pine was tree planted, then a future forest with a jack pine working group was the anticipated result. With more stringent prescription and monitoring processes now required, future evaluations of achievement of successful forest regeneration, as anticipated by treatments, will be possible.

LAKEHEAD FOREST

INDEPENDENT FOREST AUDIT

April 1, 2004 to March 31, 2008

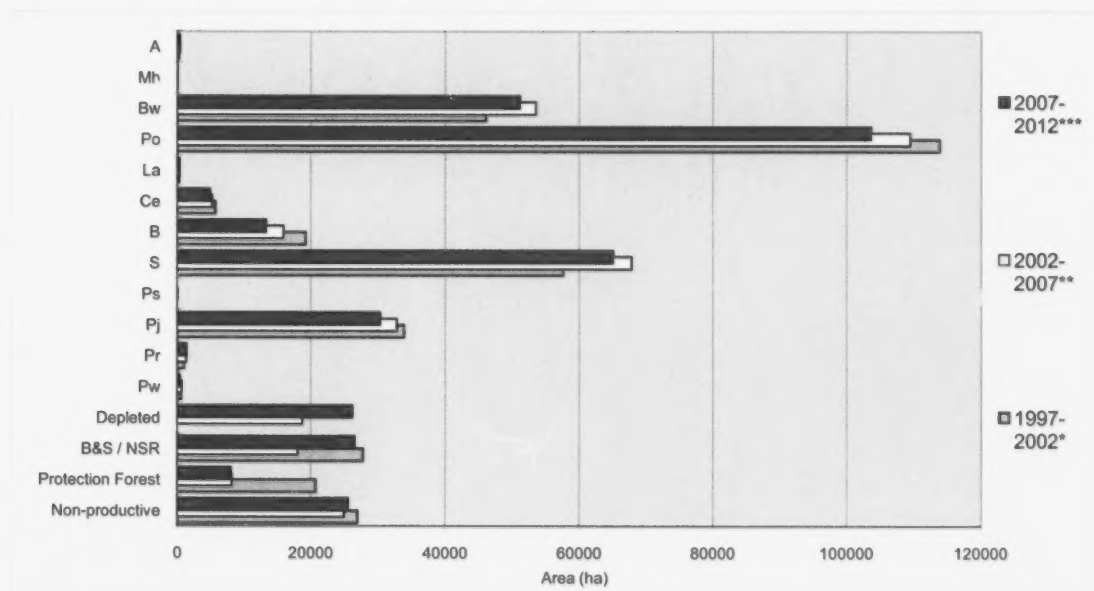
**COMPARISON & TREND ANALYSIS OF PLANNED VERSUS ACTUAL
FOREST OPERATIONS**

TABLES & GRAPHS

Lakehead Forest 2009 Independent Forest Audit
Table 1 - Summary of Total Area Under Management

Land Type	Area in hectares		
	Past Plans		Current
	1997-2002*	2002-2007**	2007-2012***
Non-Forested			
Other Land	21,613	17,202	3,821
Forested			
Non-productive	26,979	24,955	25,548
Productive			
Protection	20,752	8,206	8,067
Production Forest			
B&S / NSR	27,838	18,053	26,552
Depleted / Recent Disturbance		18,728	26,198
Working Group			
White Pine (Pw)	598	628	402
Red Pine (Pr)	1,025	1,326	1,386
Jack Pine (Pj)	33,946	32,862	30,362
Scotch Pine (Ps)		36	
Spruce All (S)	57,693	67,876	65,087
Balsam Fir (B)	19,261	15,929	13,305
Cedar (Ce)	5,778	5,260	4,961
Larch (La)	316	338	340
Poplar (Po)	113,874	109,506	103,648
White Birch (Bw)	46,152	53,576	51,152
Maple (Mh)	8	8	8
Ash (A)	247	381	347
Total Production Forest	306,736	324,507	323,748
Total Forested Land	354,467	357,668	357,363

Area of Land Type by Plan Term



*The area presented represents post-amalgamation with the Nipigon CMU (1998-2002). For pre-amalgamation area (1997-1998), please refer to 2004 IFA Trend Analysis Table 1.

**Includes Managed Crown Patent Lands, Ontario Living Legacy removals, etc. - refer to text.

***All applicable FMP Tables in the 2007-2017 FMP were prepared using Provincial Forest Type rather than Working Group. In order to provide Working Group for Trend Analysis tables, areas by Working Group have been generated from the planning inventory.

Sources:

MU 795 (1997-1998): Lakehead Forest 1997-2017 FMP Table 4.8.2

MU 796 (1998-2002): Lakehead Forest 1998-2002 Nipigon Major Amendment Table 4.8.2C

MU 796 (2007-2012): Lakehead Forest 2007-2017 FMP Table FMP-1, FMP-2

MU 796 (2002-2007): Lakehead Forest 2002-2022 FMP Table FMP-1, FMP-2

Lakehead Forest 2009 Independent Forest Audit
Table 2 - Description of Forest Units

Forest Unit		Forest Type	Working Group / Provincial Forest Type*	Site Type / Ecosite	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
1997-2002							
Pw	White Pine working group stands	Conifer	Pw	all	Shelterwood or Clearcut	Pw working group	
Pr	Red Pine working group stands	Conifer	Pr	all	Clearcut or Shelterwood	Pr working group	
Pj	Jack Pine working group stands	Conifer	Pj	all	Clearcut	Pj working group	
Sp	Spruce (all) working group stands	Conifer	Sb, Sw, S	all	Clearcut	Sb, Sw or S working group	
Bf	Balsam Fir working group stands	Conifer	Bf	all	Clearcut	Bf working group	
OC	Other Conifer stands	Conifer	Ce, La	all	Clearcut	Ce or La working group	
Po	Poplar working group stands	Intolerant Hardwood	Po	all	Clearcut	Po working group	
Bw	White Birch working group stands	Intolerant Hardwood	Bw	all	Clearcut	Bw working group	
OH	Other Hardwood stands	Tolerant Hardwood	Ab, Ms	all	Clearcut	Ab or Ms working group	
2002-2007							
PwDom	White Pine dominated stands	Conifer	Pw	all	Shelterwood	Pw-0.3	
PrDom	Red Pine dominated stands	Conifer	Pr	all	Clearcut	Pw+Pr-0.3	
PjDom	Jack Pine dominated stands	Conifer	Pj	all	Clearcut	Pj-0.6	
SpDom	Upland Spruce dominated stands	Conifer	Sw, Sb	all	Clearcut	(Sb+Sw)-0.6	
SbLow	Lowland Black Spruce stands	Conifer	Sb	ES 34, 35, 36, 37	Clearcut	(Wg-'S' or Wg-'La' or Wg-'Sb') and (ES-'34' or ES-'35' or ES-'36' or ES-'37')	
BfDom	Balsam Fir dominated stands	Conifer	Bf	all	Clearcut	Bf-0.3 and Po-0.5	
OC	Other Conifer stands	Conifer	Ce, La	all	Clearcut	(Wg-'Ce' or Wg-'La') and (Ce+La)-0.4	
Aspen	Poplar dominated stands	Intolerant Hardwood	Po	all	Clearcut	(Po-0.5 and Lh-0.2) or (Po-0.5 and Bw-0)	
BwDom	White Birch dominated stands	Intolerant Hardwood	Bw	all	Clearcut	(Bw-0.5)	
HrdMx	Hardwood dominated mixedwood stands	Mixedwood	Po, Bw	all	Clearcut	(Po+Bw)-0.6	
ConMx	Conifer dominated mixedwood stands	Mixedwood	Pj, Sw, Sb	all	Clearcut	(Pj+Sb+Sw+Pr)-0.5 and (Po+Bw)-0.4	
MxWd	Mixedwood stands	Mixedwood		all	Clearcut	(Pj+Sw+Sb)-0.7 and (Po+Bw)-0.6	
OH	Other Hardwood stands	Tolerant Hardwood	Mh, Ab	all	Clearcut	((Mh+Uh+Lh)-0.2) and (Ce-0.5) and (Bw-0.5) or (Po-0.5 and Lh-0.1 and Bw-0.1) or (Wg-'Po' and ES-'38' and Bw-0.1)	
Deg	Degraded stands	Intolerant Hardwood	Po, Bw, Bf	all	Clearcut	Site Specific	
2007-2012							
PwDom	White Pine dominated stands	Conifer	Pw (PWR)	ES 15, 18 & 24	Clearcut	Pw-30%	
PrDom	Red Pine dominated stands	Conifer	Pr (PWR)	ES 11, 15, 18, 24 & 31	Clearcut	Pw+Pr-30%	
PjDom	Jack Pine dominated stands	Conifer	Pj (PJK)	ES 12, 13, 14, 20, 21, 22 & 25	Clearcut	Pj-60%	
SpDom	Upland Spruce dominated stands	Conifer	Sw, Sb (MCU)	ES 12, 14, 20, 21, 22, 26, 27, 31 & 32	Clearcut	Sx+Sb+Sw-60%	
SbLow	Lowland Black Spruce stands	Conifer	Sb (MCL)	ES 34, 35, 36 & 37	Clearcut	(WG-Sx, Sb or La) & ES-34, 35, 36 or 37	
BfDom	Balsam Fir dominated stands	Conifer	Bf (MCU)	ES 12, 14, 21, 22, 27 & 32	Clearcut	Bf-30% & Po-50%	
OC	Other Conifer stands	Conifer	Ce, La (MCL)	ES 17 & 37	Clearcut	(WG-Ce or La) & (Ce+La-40%)	
Aspen	Poplar dominated stands	Intolerant Hardwood	Po (POP)	ES 12, 16, 19, 23, 29 & 33	Clearcut	(Po-50% & (Uh+Lh-20%)) or (Po-50% & Bw-0%)	
BwDom	White Birch dominated stands	Intolerant Hardwood	Bw (BWT)	ES 12, 16, 19, 23 & 33	Clearcut	Bw-50%	
HrdMx	Hardwood dominated mixedwood stands	Mixedwood	Po, Bw (MIX)	ES 12, 16, 19, 23, 29 & 33	Clearcut	Po+Bw-60%	
ConMx	Conifer dominated mixedwood stands	Mixedwood	Pj, Sw, Sb (MCU)	ES 12, 14, 20, 21, 22, 26 & 32	Clearcut	(Pr+Pj+Sx+Sb+Sw-50%) & (Po+Bw-40%)	
MxWd	Mixedwood stands	Mixedwood	MIX	ES 12, 14, 16, 18, 19, 21, 22, 23, 29 & 32	Clearcut	(Pj+Sx+Sb+Sw-70%) & (Po+Bw-70%)	
OH	Other Hardwood stands	Tolerant Hardwood	Mh, Ab (TOL)	ES 19, 23, 30 & 38	Clearcut	((Uh+Lh-20%) & (Ce-50%) & Bw-50%) or (Po > 50% & Lh-10% & Bw-10%) or (WG-Po & Bw-10% & ES-38)	

^aFor comparison and continuity, where available, both the Working Group and the most applicable Provincial Forest Type are presented for the 2007-2012 term.

Sources: 1997-2002: Lakehead Forest 1997-2017 Forest Management Plan Table 4.11
2002-2007: Lakehead Forest 2002-2022 Forest Management Plan Table FMP-8
2007-2012: Lakehead Forest 2007-2017 Forest Management Plan Table FMP-3

Lakehead Forest 2009 Independent Forest Audit
Table 3a - Summary of Planned & Actual Harvest Volumes (NORMAL HARVEST)

Planned Annualized Harvest Volumes - Incorporates all FMP amendments*

Species	Volume in cubic metres		
	Past Plans		Current**
	1997-2002	2002-2007	2007-2012
White Pine	2,703	1,796	397
Red Pine	949	1,467	571
Jack Pine	29,584	58,043	41,811
Spruce All	29,251	73,070	71,672
Balsam Fir	19,185	7,662	29,123
Cedar	2,059	2,419	4,036
Larch	419	1,542	1,542
Poplar	169,033	117,586	171,586
White Birch	31,314	54,971	55,194
Other Hardwood (Ash)	505	668	583
Total Planned Volumes	285,004	319,223	376,515

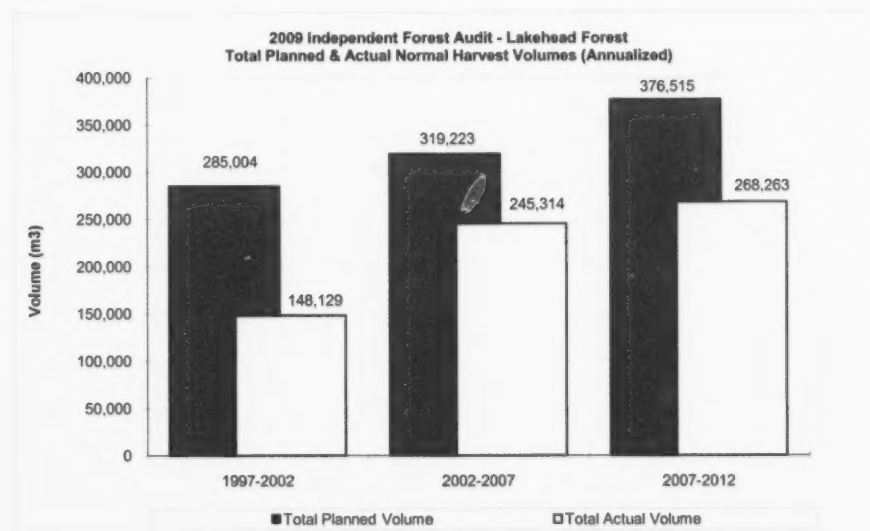
Actual Annualized Harvest Volumes

Species	Volume in cubic metres		
	Past Plans		Current***
	1997-2002	2002-2007	2007-2012
White Pine	843	249	
Red Pine	795	415	379
Jack Pine	29,385	57,561	82,012
Spruce All	18,137	44,345	52,315
Balsam Fir	8,488	11,576	10,455
Cedar	290	359	449
Larch	131	591	468
Poplar	86,917	116,541	110,813
White Birch	3,127	13,610	11,348
Other Hardwood (Ash)	14	67	24
Total Actual Volumes	148,129	245,314	268,263

*Planned FMP volumes are the planned utilized volumes.

**2007-2012 Average Planned Annual Harvest Volumes represent the first term of the ten-year 2007-2017 FMP. As planned harvest area and volume may differ between terms, the first term (2007-2012) area and volume (17,589 ha and 353,204 m³) is slightly greater than the second term (2012-2017) area and volume (17,030 ha and 353,204 m³).

***Annualized Actual Harvest Volumes for the 2007-2012 period are actual reported volumes from the 2007-2008 Annual Report.



Sources:

1997-2002: Lakehead Forest 1997-2002 Report of Past Forest Operations - Table C

2002-2007: Lakehead Forest 2006-2007 Annual Report Table AR-4

2007-2012: Lakehead Forest 2007-2017 FMP Table FMP-18 & 2006-2007 Annual Report Table AR-4

Lakehead Forest 2009 Independent Forest Audit

Table 3b - Summary of Planned & Actual Harvest Volumes (SALVAGE HARVEST)

Planned Annualized Harvest Volumes - Incorporates all FMP amendments

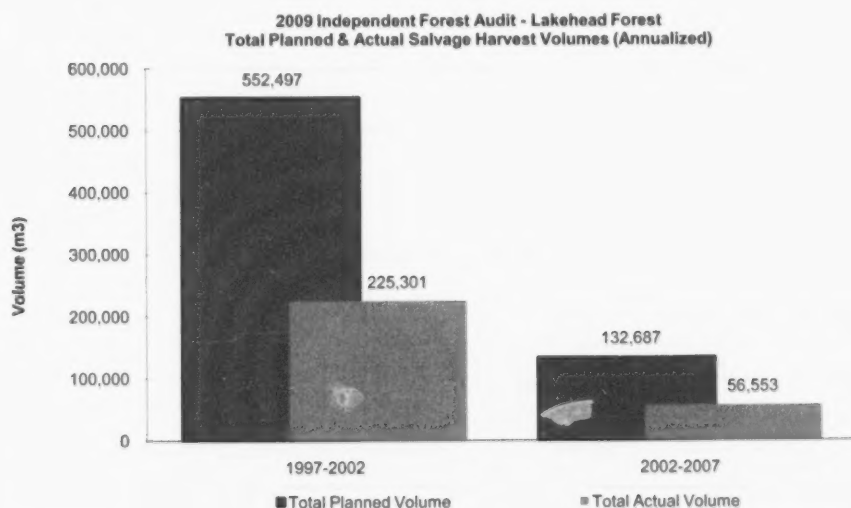
Species	Volume in cubic metres		
	Past Plans		Current
	1997-2002*	2002-2007	2007-2012
White Pine	11,321	427	
Red Pine	1,702	36	
Jack Pine	120,965	23,595	
Spruce All	64,932	16,090	
Balsam Fir	91,540	14,615	
Cedar	2,000	333	
Larch	-	59	
Poplar	248,238	57,772	
White Birch	11,572	19,210	
Other Hardwood (Ash)	227	551	
Total Planned Volumes	552,497	132,687	-

Actual Annualized Harvest Volumes

Species	Volume in cubic metres		
	Past Plans		Current**
	1997-2002*	2002-2007	2007-2012
White Pine	1,477	14	
Red Pine	547	4	
Jack Pine	66,183	16,180	242
Spruce All	20,846	7,108	95
Balsam Fir	11,844	5,031	48
Cedar	193	5	
Larch	46	-	48
Poplar	122,616	27,366	481
White Birch	1,540	845	
Other Hardwood (Ash)	9	-	
Total Actual Volumes	225,301	56,553	913

*1997-2002 volumes are annualized for a 3-year period as blowdown salvage operations did not commence until 1999-2000

**While no salvage harvest area was planned in the 2007-2012 period, a small 8.0 hectare blowdown patch was harvested within a normal harvest block, and reported as salvage harvest area in the 2007-2008 AR. Refer to the 2007-2008 AR for additional information. Annualized Actual Harvest Volumes for the 2007-2012 period are actual reported volumes from the 2007-2008 Annual Report (as the area is small, it is not included in the figure below).



Sources:

1997-2002: Lakehead Forest 1997-2002 Report of Past Forest Operations - Table D

2002-2007: Lakehead Forest 2002-2022 FMP Table FMP-23 & 2006-2007 Annual Report Table AR-4

2007-2012: Lakehead Forest 2007-2017 FMP Table FMP-18 & 2007-2008 Annual Report Table AR-4

Lakehead Forest 2009 Independent Forest Audit

Table 4 - Summary of Planned & Actual Depletion Area (Annualized)*

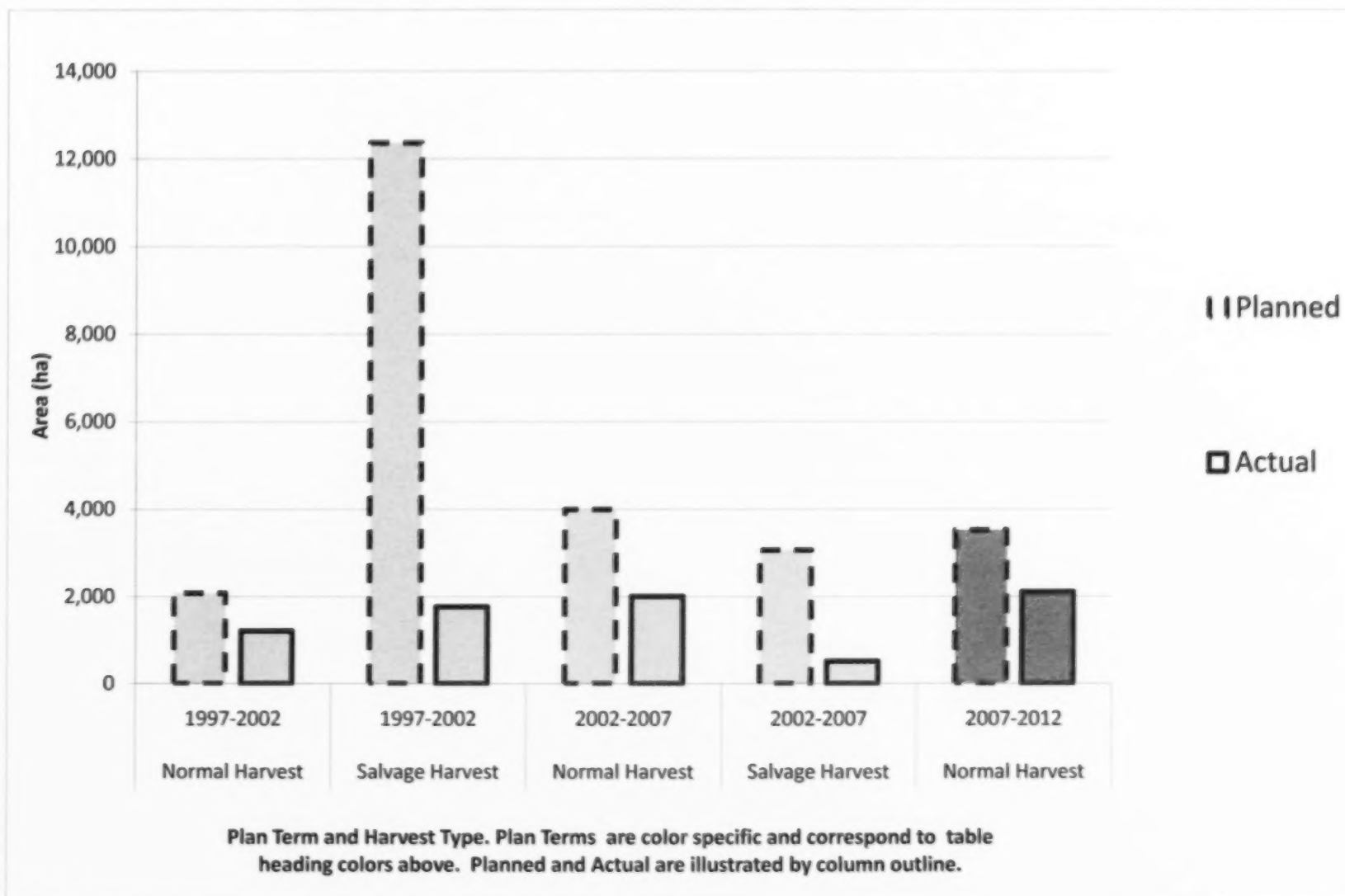
Forest Unit	Planned Annual Harvest Area (ha)					Actual Depletion Area (ha)								
	Plan Term					Plan Term								
	Past Plans				Current	Past Plans						Current		
	1997-2002		2002-2007		2007-2012	1997-2002			2002-2007			2007-2012		
	Normal Harvest	Salvage Harvest**	Normal Harvest	Salvage Harvest	Harvest	Normal Harvest	Salvage Harvest**	Natural	Normal Harvest	Salvage Harvest	Natural	Normal Harvest	Salvage Harvest	Natural
PW	0.0	77.5				0.2	8.7	15.4						
PR	0.0	0.1				1.0	1.1	7.0						
PJ	226.6	2,228.8				196.2	490.2	398.9						
SP	221.7	906.5				107.4	118.4	122.5						
BF	96.6	1,401.7				35.2	88.3	239.4						
OC	29.2	130.0				18.3	4.5	6.8						
PO	1,356.2	5,573.6				779.6	980.4	1,068.9						
BW	144.6	2,006.2				64.0	74.7	251.3						
OH	0.1	34.0				0.0	2.6	0.7						
1997-2002 Totals	2,074.9	12,358.5				1,201.9	1,769.0	2,110.9						
PwDom			18.0	11.1	2.5				0.2	3.1	0.0			136.7
PrDom			12.9	0.0	0.0				0.4	0.0	0.0	0.5		418.7
PjDom			243.8	293.0	112.6				185.7	103.1	2.8	227.9		1,326.6
SpDom			132.7	42.3	74.2				82.6	5.7	74.0	58.9		516.9
SbLow			179.6	91.2	242.0				52.4	2.4	24.6	19.0		717.7
BfDom			436.3	225.6	503.0				204.7	25.9	81.6	43.7		241.9
ConMx			352.4	133.1	307.9				201.7	42.0	8.6	355.2		1,559.4
OC			133.9	23.9	29.5				13.0	0.6	0.8	1.0		56.5
Aspen			789.4	933.4	410.7				562.4	153.0	16.8	301.1	8.0	2,105.9
BwDom			504.1	215.9	116.5				96.1	33.2	88.2	14.8		96.0
HrdMx			291.8	388.1	612.8				166.9	33.9	0.1	376.0		566.2
MxWd			636.1	695.9	1,106.0				315.9	101.3	98.8	704.8		2,805.4
OH			11.2	6.7	0.2				4.8	0.9	0.0			101.0
Deg***			248.2	0.0					118.7	7.6	0.0			
2002-2007 / 2007-2012 Totals			3,990.4	3,060.3	3,517.8				2,005.6	512.7	396.3	2,102.9	8.0	10,648.9

*Area is Annualized for the 1997-2002 and 2002-2007 periods. Annualized actual values for the 2007-2012 period are actual reported figures from the 2007-2008 Annual Report (as the actual salvage area harvested is relatively small, it is not included in the figure below).

**Actual salvage harvest in the 1997-2002 period took place during only three years (1999-2000, 2000-2001 and 2001-2002). As such, the area is annualized using these years only.

***The Degraded forest unit was not included in the 2007-2012 FMP.

Addendum to Table-4. Planned vs. Actual Harvest Area by Plan Term



Sources:

Planned Area:

1997-2002: Lakehead Forest 1997-2002 Report of Past Forest Operations Table RPFO-2 & Table D (for planned salvage)

2002-2007: Lakehead Forest 2006-2007 Annual Report Table AR-1. Lakehead Forest 2002-2022 FMP Table FMP 22a

2007-2012: Lakehead Forest 2007-2017 FMP Table FMP-15

Actual Area:

1997-2002: Lakehead Forest 1997-2002 Report of Past Forest Operations Table RPFO-2

2002-2007: Lakehead Forest 2006-2007 Annual Report Tables AR-1 and AR-6. Salvage area by forest unit is derived from 2002-2007 depletion records.

2007-2012: Lakehead Forest 2007-2008 Annual Report Table AR-1

Lakehead Forest 2009 Independent Forest Audit
Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m³)***	Unavailable		Stage of Management	Available	
				(ha)	(m³)		(ha)	(m³)***
1997-2002**								
PW	B&S						29.0	
	1-20						23.0	
	21-40						-	
	41-60						-	
	61-80						187.0	
	81-100						234.0	
	101-120						128.0	
	121+						49.0	
Forest Unit Subtotal		-					650.0	
PR	B&S						487.0	
	1-20						520.0	
	21-40						64.0	
	41-60						13.0	
	61-80						30.0	
	81-100						-	
	101-120						-	
	121+						424.0	
Forest Unit Subtotal		18.0					1,538.0	
PJ	B&S						2,256.0	
	1-20						3,316.0	
	21-40						1,364.0	
	41-60						6,995.0	
	61-80						17,959.0	
	81-100						4,094.0	
	101-120						1,154.0	
	121+						93.0	
Forest Unit Subtotal		289.0					37,231.0	
SP	B&S						9,979.0	
	1-20						7,843.0	
	21-40						3,062.0	
	41-60						12,672.0	
	61-80						14,591.0	
	81-100						11,690.0	
	101-120						6,382.0	
	121+						5,615.0	
Forest Unit Subtotal		1,393.0					71,834.0	
BF	B&S						280.0	
	1-20						101.0	
	21-40						1,317.0	
	41-60						9,080.0	
	61-80						7,554.0	
	81-100						1,065.0	
	101-120						222.0	
	121+						12.0	
Forest Unit Subtotal		60.0					19,631.0	
OC	B&S						1,143.0	
	1-20						158.0	
	21-40						110.0	
	41-60						896.0	
	61-80						981.0	
	81-100						1,736.0	
	101-120						963.0	
	121+						1,379.0	
Forest Unit Subtotal		799.0					7,366.0	
PO	B&S						6,085.0	
	1-20						7,752.0	
	21-40						5,385.0	
	41-60						28,587.0	
	61-80						52,423.0	
	81-100						18,646.0	
	101-120						2,101.0	
	121+						165.0	
Forest Unit Subtotal		4,823.0					121,144.0	

Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m ³)***	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)***
BW	B&S						364.0	
	1-20						707.0	
	21-40						864.0	
	41-60						14,252.0	
	61-80						21,065.0	
	81-100						9,927.0	
	101-120						134.0	
	121+						84.0	
Forest Unit Subtotal		13,363.0					47,397.0	
OH	B&S						5.0	
	1-20						-	
	21-40						-	
	41-60						61.0	
	61-80						149.0	
	81-100						25.0	
	101-120						-	
	121+						-	
Forest Unit Subtotal		7.0					260.0	
Total		20,752.0					307,051.0	
2002-2007								
PwDom	1-20						132.1	-
	21-40						-	-
	41-60						-	-
	61-80						42.4	5,268.2
	81-100						185.1	28,150.9
	101-120						66.0	10,235.9
	121-140						17.3	3,840.6
	141-160						46.8	5,391.4
Forest Unit Subtotal							489.7	52,887.0
PrDom	1-20						1,292.3	477.7
	21-40						244.7	6,690.2
	41-60						38.6	4,681.0
	61-80						9.1	1,856.4
	81-100						52.6	13,541.1
	101-120						-	-
	121-140						108.0	12,533.2
	141-160						9.9	1,420.7
	161-180						10.0	1,428.0
	181-200						-	-
	201-220						77.7	10,228.9
	221-240						57.1	5,710.0
	241-260						46.7	4,600.0
Forest Unit Subtotal							1,946.7	63,167.2
PjDom	1-20						7,022.9	-
	21-40						753.1	14,643.2
	41-60	13.0	1,210.3				1,386.6	160,253.3
	61-80	10.8	997.9				6,564.1	948,494.1
	81-100						792.8	137,426.1
	101-120						110.1	17,358.6
	121-140						-	-
	141-160						-	-
Forest Unit Subtotal		23.8	2,208.2				16,629.6	1,278,175.3
SpDom	1-20						11,608.9	-
	21-40						1,498.3	10,489.6
	41-60						322.3	18,887.9
	61-80	3.3	351.1				3,018.5	341,391.5
	81-100	2.2	209.0				4,231.9	604,606.0
	101-120						1,906.4	301,886.8
	121-140						287.6	39,682.4
	141-160						24.3	2,539.6
Forest Unit Subtotal		5.5	560.1				22,898.2	1,319,483.8

Lakehead Forest 2009 Independent Forest Audit
Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m ³)***	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)***
SbLow	1-20						1,715.9	-
	21-40						157.4	170.2
	41-60						1,007.2	6,711.6
	61-80	437.3	14,735.0				6,715.2	297,143.5
	81-100	1,000.7	64,710.7				8,178.7	644,583.1
	101-120	999.6	92,925.2				8,575.4	921,841.3
	121-140	35.5	2,731.3				946.1	100,341.2
	141-160	21.7	2,405.0				112.3	9,072.8
Forest Unit Subtotal		2,494.8	177,507.2				27,408.2	1,979,863.7
BfDom	1-20						4,428.3	-
	21-40						349.3	6,687.3
	41-60						5,928.3	386,950.2
	61-80	15.2	1,294.1				6,939.6	660,298.1
	81-100	176.2	12,713.6				1,157.1	129,928.4
	101-120						118.7	9,643.8
	121-140						24.3	2,327.6
	141-160						-	-
Forest Unit Subtotal		191.4	14,007.7				18,945.6	1,195,835.4
OC	1-20						204.8	-
	21-40						62.9	36.8
	41-60						101.7	989.0
	61-80	108.4	2,987.9				491.0	13,304.1
	81-100	22.3	1,096.3				1,194.8	63,725.1
	101-120	383.3	28,273.8				1,509.0	97,354.2
	121-140	47.0	3,239.6				700.9	47,485.5
	141-160	36.2	3,522.1				357.3	19,641.7
Aspen	1-20						78.7	5,085.8
	21-40						204.8	-
	41-60						62.9	36.8
	61-80	108.4	2,987.9				101.7	989.0
	81-100	22.3	1,096.3				491.0	13,304.1
	101-120	383.3	28,273.8				1,194.8	63,725.1
	121-140	47.0	3,239.6				1,509.0	97,354.2
	141-160	36.2	3,522.1				700.9	47,485.5
Forest Unit Subtotal		603.8	39,587.0				4,701.1	247,622.2
BwDom	1-20						21,494.6	-
	21-40						5,125.9	91,748.8
	41-60	195.9	17,118.3				10,100.4	1,135,507.9
	61-80	699.2	82,004.9				29,810.7	4,390,612.0
	81-100	129.1	15,726.4				7,870.5	1,206,253.2
	101-120						614.6	86,293.9
	121-140						23.4	2,661.3
	141-160						0.4	3.9
Forest Unit Subtotal		1,024.2	114,849.6				75,040.5	6,913,081.0
HrdMx	1-20						3,005.2	-
	21-40						183.3	2,825.7
	41-60	344.1	17,784.3				5,028.8	328,354.9
	61-80	739.4	47,401.2				13,908.7	1,124,187.8
	81-100	155.9	15,459.5				4,000.8	296,083.7
	101-120	23.6	2,400.1				394.4	25,256.9
	121-140						-	-
	141-160						3.4	39.8
Forest Unit Subtotal		1,263.0	83,045.1				26,524.6	1,776,748.8
ConMx	1-20						657.5	-
	21-40						301.0	1,146.1
	41-60	273.3	15,679.6				7,472.5	557,453.9
	61-80	515.7	39,101.8				17,832.6	1,757,152.0
	81-100	57.6	3,720.0				3,210.6	321,653.0
	101-120	6.2	1,388.8				338.6	36,117.8
	121-140						38.5	2,829.8
	141-160						-	-
Forest Unit Subtotal		852.8	59,890.2				29,851.3	2,676,352.6
MxWd	1-20						3,797.7	-
	21-40						2,298.3	48,608.6
	41-60						1,347.5	106,993.5
	61-80	16.6	1,925.6				9,109.4	1,129,430.3
	81-100	12.8	1,884.2				5,956.9	750,983.8
	101-120						1,374.4	159,980.3
	121-140						336.5	28,863.0
	141-160						14.6	689.1
Forest Unit Subtotal		29.4	3,809.8				24,235.3	2,225,548.6
MxWd	1-20						5,803.1	-
	21-40						3,047.9	36,768.6
	41-60	236.0	11,993.9				9,771.9	620,948.2
	61-80	1,255.8	92,296.4				35,577.4	3,240,200.8
	81-100	145.7	15,998.1				15,130.9	1,628,771.2
	101-120	72.8	7,251.3				2,436.5	279,294.8
	121-140						-	-
	141-160						498.7	31,880.5
Forest Unit Subtotal		1,710.3	127,539.7				72,266.4	5,837,864.1

Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m ³)***	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)***
OH	1-20						50.8	-
	21-40						28.0	50.4
	41-60						158.8	7,682.6
	61-80						443.7	36,385.5
	81-100	6.8	881.3				134.7	15,405.3
	101-120						7.1	585.8
	121-140						-	-
	141-160						-	-
Forest Unit Subtotal		6.8	881.3				823.1	60,109.6
Deg	1-20						5.9	-
	21-40						171.1	1,941.4
	41-60						319.1	16,761.1
	61-80						836.3	65,085.5
	81-100						1,084.7	103,148.2
	101-120						330.1	30,532.8
	121-140						-	-
	141-160						-	-
Forest Unit Subtotal							2,747.2	217,469.0
Total		8,205.8	623,885.9				324,507.5	25,844,208.3
2007-2012								
PwDom	1-20						281.7	-
	21-40						5.9	-
	41-60						-	-
	61-80						-	-
	81-100						121.3	-
	101-120						52.6	-
	121-140						31.0	-
	141-160						4.5	-
	161-180						13.8	-
Forest Unit Subtotal							510.8	-
PrDom	1-20						2,973.3	-
	21-40						595.1	-
	41-60						38.7	-
	61-80						9.8	-
	81-100						-	-
	101-120						27.3	-
	121-140						56.4	-
	141-160						27.2	-
	161-180						9.7	-
	181-200						10.0	-
	201-220						76.7	-
	221-240						55.2	-
	241-260						46.8	-
Forest Unit Subtotal							3,926.2	-
PyDom	1-20	4.3					9,951.1	-
	21-40						1,735.0	-
	41-60	13.0					217.6	-
	61-80						5,491.6	-
	81-100						1,036.3	-
	101-120						59.5	-
	121-140						-	-
	141-160						-	-
Forest Unit Subtotal		17.3					18,491.1	-
SpDom	1-20						13,869.8	-
	21-40						2,762.2	-
	41-60						394.8	-
	61-80	3.3					2,475.2	-
	81-100	2.2					4,022.3	-
	101-120						1,632.3	-
	121-140						413.3	-
	141-160						6.1	-
	161-180						18.1	-
Forest Unit Subtotal		5.5					25,594.1	-

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Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m ³)***	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)***
SbLow	1-20						2,314.4	
	21-40						277.9	
	41-60						703.5	
	61-80	441.8					6,250.0	
	81-100	990.6					7,822.3	
	101-120	887.4					7,924.1	
	121-140	172.0					1,733.1	
	141-160	12.0					70.9	
	161-180	9.1					76.6	
Forest Unit Subtotal		2,512.9					27,172.8	
BfDom	1-20						5,370.5	
	21-40						163.4	
	41-60						3,733.4	
	61-80	15.3					6,827.7	
	81-100	27.3					1,272.6	
	101-120	149.6					371.4	
	121-140						15.8	
	141-160							
Forest Unit Subtotal		192.2					17,754.8	-
OC	1-20	11.7					443.4	
	21-40						38.6	
	41-60						118.4	
	61-80	54.4					409.6	
	81-100	22.3					850.5	
	101-120	298.4					1,272.4	
	121-140	127.0					991.9	
	141-160	30.0					208.3	
	161-180	6.5					300.4	
	181-200	6.6					12.2	
Forest Unit Subtotal		556.9					4,645.7	-
Aspen	1-20						17,523.10	
	21-40						8,056.2	
	41-60	156.8					4,983.8	
	61-80	585.4					25,880.5	
	81-100	208.9					10,435.7	
	101-120						1,719.7	
	121-140						85.0	
	141-160							
Forest Unit Subtotal		951.1					68,684.0	-
BwDom	1-20	46.2					4,028.9	
	21-40						195.4	
	41-60	329.8					2,644.9	
	61-80	716.0					14,853.8	
	81-100	179.0					4,010.5	
	101-120						354.2	
	121-140						0.2	
	141-160							
Forest Unit Subtotal		1,271.0					26,090.2	-
HrdMx	1-20						2,587.9	
	21-40						372.6	
	41-60	184.4					2,318.4	
	61-80	558.6					20,310.2	
	81-100	191.0					4,815.6	
	101-120	11.7					631.2	
	121-140						1.7	
	141-160							
Forest Unit Subtotal		945.7					31,037.6	-

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Table 5 - Summary of Managed Productive Forest by Forest Unit

Forest Unit	Age Class	Protection Forest*		Production Forest				
		(ha)	(m ³)***	Unavailable		Stage of Management	Available	
				(ha)	(m ³)		(ha)	(m ³)***
ConMx	1-20						4,676.3	
	21-40						3,488.8	
	41-60						826.2	
	61-80	16.6					7,292.1	
	81-100	56.8					5,517.4	
	101-120						1,735.4	
	121-140						526.4	
	141-160						24.3	
	161-180						6.7	
Forest Unit Subtotal		73.4					24,093.6	-
MxWd	1-20	41.2					9,043.9	
	21-40						4,151.6	
	41-60	169.7					4,850.5	
	61-80	1,167.5					34,248.2	
	81-100	101.3					18,580.9	
	101-120	53.2					3,247.5	
	121-140						764.4	
	141-160						105.8	
Forest Unit Subtotal		1,532.9					74,992.8	-
OH	1-20						96.3	
	21-40						28.2	
	41-60						16.6	
	61-80	0.7					379.2	
	81-100	6.9					204.1	
	101-120						29.7	
	121-140							
	141-160							
Forest Unit Subtotal		7.6					754.1	-
Total		8,066.5	-	-	-	-	323,747.8	-

*Protection Forest for 1997-2002 plan includes PF Site Class 4 & Islands. Protection forest by age class is not available.

**1997-2002 FMP includes area in the Nipigon portion of the Forest following amalgamation in 1998 - refer to text.

***1997-2002 and 2007-2017 FMP Tables (see sources below) do not provide volumes for Protection Forest or Production Forest.

Sources:

1997-2002: Lakehead Forest 1997-2017 Forest Management Plan - Table 4.8.2c (Amalgamated with Nipigon landbase) and Tables 4.9 & 4.9a (Nipigon amalgamation)

2002-2007: Lakehead Forest 2002-2022 FMP Table FMP-9

2007-2012: Lakehead Forest 2007-2017 FMP Table FMP-4

Lakehead Forest 2009 Independent Forest Audit

Table 6 - Summary Report of Renewal, Tending and Protection Operations - Annualized Harvest & Natural Depletion (Including Salvage) Areas

	Area Summary of all Forest Units (ha)*																	
	Past Plan - 1997-2002**						Past Plan - 2002-2007						Current Plan - 2007-2012***					
	Normal		Natural		Total		Normal		Natural		Total		Normal		Natural		Total	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Renewal																		
Regeneration																		
Uneven-Aged Management																		
Selection Cut - Harvest																		
Total Uneven-Aged Management																		
Even-Aged Management																		
<i>Natural Regeneration</i>																		
Clearcut	1,515	371	3,529	325	5,044	696	2,190	630	632	234	2,822	865	2,098	1,110	632		2,730	1,110
Strip Cut	96	20			96	20	26				26						-	
Seed Tree Cut	25				25		3		5		8		1		5		6	
Uniform Shelterwood Seed Cut							3				3							
Subtotal Natural	1,636	391	3,529	325	5,165	716	2,221	630	637	234	2,858	865	2,099	1,110	637	-	2,737	1,110
<i>Artificial Regeneration</i>																		
Planting	511	752	1,275	347	1,786	1,099	914	464	1,157	970	2,071	1,434	1,014	1,218	1,157		2,171	1,218
Seeding			1,000	-	1,000	-			161	161	161	161					-	-
direct with site preparation																		
Scarification	65				65	-												
Subtotal Artificial	576	752	2,275	347	2,851	1,099	914	464	1,317	1,131	2,232	1,595	1,014	1,218	1,157	-	2,171	1,218
Total Even-Aged Management	2,212	1,143	5,804	672	8,016	1,815	3,135	1,094	1,955	1,365	5,090	2,459	3,113	2,328	1,794	-	4,907	2,328
Total Regeneration	2,212	1,143	5,804	672	8,016	1,815	3,135	1,094	1,955	1,365	5,090	2,459	3,113	2,328	1,794	-	4,907	2,328
Site Preparation																		
Mechanical	556	668	2,275	656	2,831	1,324	884	534	1,134	651	2,018	1,184	932	783	1,134		2,066	783
Chemical							2	3			2	3					-	-
Prescribed Burn																		
Total Site Preparation	556	668	2,275	656	2,831	1,324	886	537	1,134	651	2,020	1,187	932	783	1,134	-	2,066	783
Tending																		
Cleaning																		
manual							6	8			6	8					-	-
chemical - ground	35	165			35	165	278	289	218	222	496	511	185	127	961	72	1,146	198
- aerial	493	899		1	493	900	383	431	744	579	1,128	1,010	629	901	972	256	1,601	1,157
mechanical																		
prescribed burn																		
Spacing, pre-commercial thinning, improvement cutting																		
even-aged																		
uneven-aged																		
Pruning																		
Cultivation																		
0.5						0.5												
Total Tending	528	1,064	-	1	528	1,066	667	727	963	801	1,629	1,529	814	1,027	1,933	328	2,747	1,355
Protection (Insect Pest Control)																		
Total Protection																		
Supplemental Treatment																		
Planting							-	42	-	47	-	88	-	31	-	-	-	31
Total Supplemental Treatment							-	42	-	47	-	88	-	31	-	-	-	31

*"Natural" refers to naturally disturbed areas (including salvage harvest). "Normal" refers to areas disturbed by harvest only.

**1997-2002 planned & actual treatment area for natural depletion areas (including salvage) annualized over a two-year period, as renewal activities commenced in 2000-2001.

***Actual area information for 2007-2012 available and annualized for the two-year period of 2007-2008 and 2008-2009.

Sources:

1997-2002 Lakehead Forest 1997-2002 Report of Past Forest Operations - RPFO-7 (Harvest & Natural)

2002-2007 Lakehead Forest 2006-2007 Annual Report Table AR-7

2007-2012 Lakehead Forest 2007-2008 Annual Report Table AR-7 GFI silviculture records for 2008-2009 Lakehead Forest 2007-2017 FMP Table FMP-21

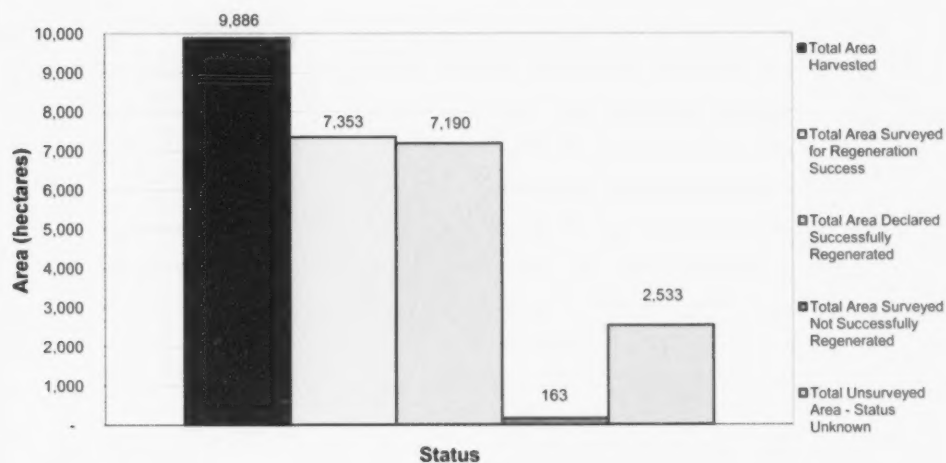
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Table 7 - Harvested Area Successfully Regenerated - Summary of All Forest Units

Areas harvested for the 5-year period: fiscal years 1994-1995 through 1998-1999, inclusive*.
Survey information up to and including fiscal year 2008-2009.

Category / Status	Area in Hectares	
	All Forest Units Combined	
	Even-Aged Management	Uneven-Aged Management
Total Area Harvested	9,886	-
Total Area Surveyed for Regeneration Success	7,353	-
Total Unsurveyed Area - Status Unknown	2,533	-
Total Area Declared Successfully Regenerated	7,190	-
Total Area Surveyed Not Successfully Regenerated	163	-
Not Sufficiently Restocked (NSR)	163	-
Barren & Scattered (B&S)	-	-
Not Available for Regeneration (eg. Roads & Landings)	-	-
Other	-	-
Percent of Area Surveyed Declared Successfully Regenerated	97.8%	-

Regeneration Status of 1994-1995 to 1998-1999 Harvest Area *



*The year of depletion is based on the "year of origin" (YRORG) calculated for the 2007-2017 FMP Planning Inventory and takes into consideration the regeneration lag associated with tree planted areas. For example: Planted areas of YRORG = 1996 to 2000 are considered depleted between 1994 and 1998 as a two-year regeneration lag is assumed. In all natural regeneration areas, year of depletion equals the year of origin.

Sources:

Lakehead Forest 2007-2017 FMP Planning Inventory
Annual Report and Free-to-Grow Data

